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ABSTRACT

This packet contains seven learning modules developed for use in Fieldcrest Cannon workplace literacy classes for dye tub operators. The modules cover the following topics: (1) communications 1; (2) communications 2; (3) general safety; (4) chemical safety; (5) calculator; (6) benefits; and (7) statistical process control. Modules consist of an outline that links specific instructional objectives with learning activities, time needed, resources and materials to use, and an evaluation process. Learning activities include a motivational activity, teaching vocabulary, and instructional activities. Attachments to lesson plans include glossaries, information sheets, worksheets, transparency masters, and exercises. (KC)

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Alabama State Department of Education

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Fieldcrest Cannon Workplace Literacy Modules for Dye Tub Operators

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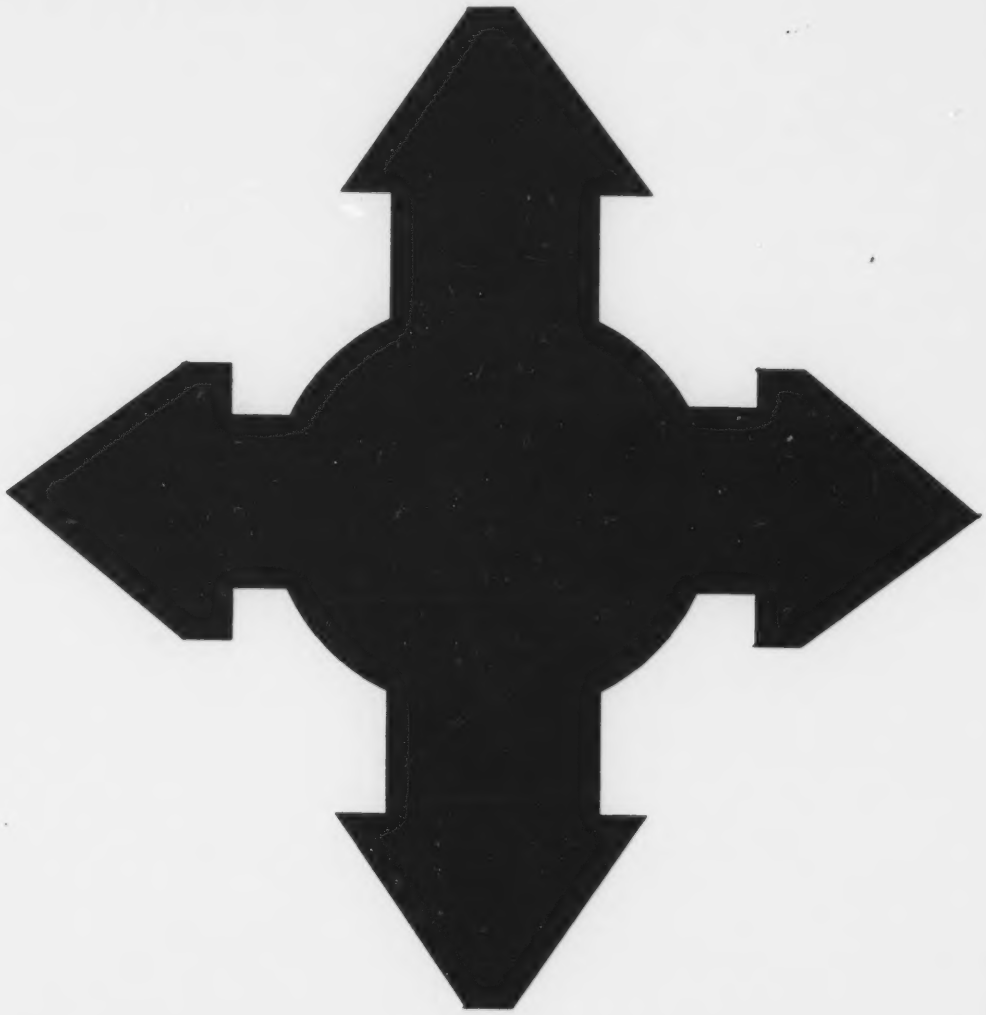
CE077670

1	Communications One
2	Communications Two
3	General Safety
4	Chemical Safety
5	Calculator
6	Benefits
7	SPC
8	

Communications One



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Module: Communication Lesson One **Overall Time 50 min**

Job Title: Dye House Operators **Page 1 of 2**

Specific Instructional Objective	Learning Activities	Time	Resources/ Materials	Evaluation Process
Students will be able to identify and demonstrate the three directions communication flows in a work situation.	**Motivational Activity:** Instructor will distribute index cards. Learners will be asked to do the following: (1) Give a precise definition of the word "soon" (in terms of hours, minutes, etc.). (2) Write several sentences in which the word "run" has different meanings. (3) Quickly, and without thinking about it, write down the number of floors they think are in a tall building. Discuss the different answers and talk about how different people have different opinions on the same subject.	10 min	Index cards	Teacher Observation
	Pre-Assessment: Thumbs up or down opinion.			Teacher Observation
	Teach Vocabulary: Distribute vocabulary and use overhead to discuss vocabulary words and meanings (first 7 words for this lesson).	10 min	Attachments A and B. Overhead Projector	

Specific Instructional Objective	Learning Activities	Time	Resources/ Materials	Evaluation Process
	Instructional Activities: Teacher reads handout (Attachment C) and leads discussion.	15 min	Attachment C	Teacher observation of responses.
	Learners complete Attachment D. Discuss learner's answers		Attachment D	
	Discuss three directions of communication (Overhead transparency, Attachment E)	15 min	Attachment E Overhead Projector	
	Distribute Attachment F (pages 1 & 2) "Making Requests".		Attachment F	
	Distribute Attachment G "Disagreeing Agreeably" (Pages 1 & 2)		Attachment G Overhead Projector	
	Distribute Attachment H Word Search puzzle (Supplemental, if time allows)		Attachment H	
	Post Assessment: Thumbs up or thumbs down opinion.			Teacher Observation

Job Title: Dye House Operators

Module: Communication Skills
Lesson One

General Instructional Objective: Participants will be able to improve communication with co-workers and working second hands.

Specific Instruction Objective: Identify and demonstrate the three directions communication flows in a work situation with 100% accuracy.

Motivational Activity: Distribute index cards. Ask group to do the following:

1. Write a precise definition of the word "soon" (in terms of hours, minutes, days, weeks).

2. Write several sentences in which the word "run" has different meanings. (Example: Who will run the dye tub if an operator is out? Will you run an errand for me? Can you run a mile? The lady had a run in her hose.)

3. Quickly, and without thinking about it, write the number of floors in a tall building.

How many different time values did the group get for the word soon?

Discuss the different meanings of the word run. Can you think of other words that have more than one meaning? (Example: solution)

Did everyone agree on the number of floors in tall building? How many different answers were given? Help learners see that different people have different ideas and opinions on the same subject and that there is sometimes no right or wrong answer.

Pre-Test: Ask participants to indicate with a thumbs up or thumbs down signal, their knowledge of the following questions: (up meaning they understand the meaning, down meaning they do not understand the meaning, sideways meaning they are not sure).

Can you name the three directions of communication in a company?
Do you know the meaning of upward communication?
Do you know the meaning of downward communication?
Do you know the meaning of lateral communication?

Teach Vocabulary: Distribute vocabulary words (Attachment A). Use overhead transparency to define words (Attachment A). Allow participants to work in groups or pairs to decide on a meaning for each word. Teacher will write the meaning on the overhead transparency as the definitions are given. Distribute Attachment B. This glossary may be used as a reference. The last 5 words will be covered in Communications Lesson Two.

Instructional Activities:
Distribute Attachment C. Read handout together (teacher reading aloud, learners following along).

Distribute Attachment D. Participants will complete true or false work sheet independently. After everyone has finished, teacher will read each statement and ask for volunteers to give answers.

Use overhead transparency (Attachment E) to discuss three directions of communication in a company. Also discuss the fact that communication is both written and oral. Ask a volunteer to give an example of a particular time that he/she has communicated upward to a working second hand or to plant management. (Follow by asking for other volunteers to give examples of downward and lateral communication in his/her job.)

Distribute handout "Making Requests" (Attachment F, pages 1 & 2). Teacher will allow learners time to read scenarios and decide which one they feel is best. This would be an example of what direction of communication? (Upward)

Teacher will ask for a volunteer to describe a request that might be made from management or working second hand. If no one volunteers, teacher could discuss management requesting Bill to work on Saturday due to a rush order needed by a large customer. Would this be an example of downward communication? (Yes)

Distribute handout "Disagreeing Agreeably" (Attachment G, pages 1 & 2).
Teacher will lead discussion about disagreeing with peers (lateral direction) and with working second hands (upward direction).

Complete word search puzzle (Attachment H).

Post-Test: Ask participants to indicate, with a thumbs up or thumbs down signal, their knowledge of the following questions: (up meaning they understand the meaning, down meaning the do not know the meaning, sideways meaning they are not sure).

Can you name the three directions of communication in a company?
Do you know the meaning of upward communication?
Do you know the meaning of downward communication?
Do you know the meaning of lateral communication?

Attachment A

VOCABULARY WORDS

Communication –

Upward communication –

Downward communication –

Lateral (across) communication –

Request –

Translate –

Peer –

GLOSSARY

Communication – Two-way exchange of information

Upward communication – Communication from hourly employees upward to plant management

Downward communication – Communication from management downward to hourly employees

Lateral (across) communication – Communication between peers (or co-workers) who work at the same level of the organization

Request – Persuasive communication usually of a personal nature

Translate – To express in different terms or words

Peer – One that is of equal standing with another

Empathy – Showing you understand and relate to another's feelings without making his/her feelings or problems your own. Empathy means being sincerely interested in and concerned about other people. (Do not confuse *empathy* with *sympathy*. Sympathy is feeling sorry for someone and is an entirely different emotion.)

Attitude – A feeling or emotion toward a fact or a statement

Feedback – The transmission of evaluative information to the original source

Assertive – Acting in a bold or self-confident manner

Body Language – Nonverbal communication utilizing details such as facial expression, gestures, eye contact, touching, and space to give meaning to messages

UP DOWN ACROSS

At Fieldcrest Cannon, as well as any other industrial organization, there are three directions in which communication flows: Up ⇑ Down ⇓ Across ⇔

Of the three, upward communication is the most difficult because it must pass through a number of levels to get from source to destination. At each level, messages can be lost or misinterpreted. However, upward communication is very important to both the company and its employees. Valuable ideas originate at the lower levels of the organization that would be lost without upward communication.

Communicating with peers (co-workers) is also important. By establishing good communication with peers, cooperation and teamwork are promoted. Practicing the golden rule is the key to successful communication in the lateral (across) direction.

Industries such as Fieldcrest Cannon must also communicate downward in order to translate decisions into actions. The downward communication path is also useful for passing needed information to employees. (This communication is often written as well as oral.)

True or False

Read the following statements and decide if the statement is true or false. Place a circle around the correct answer.

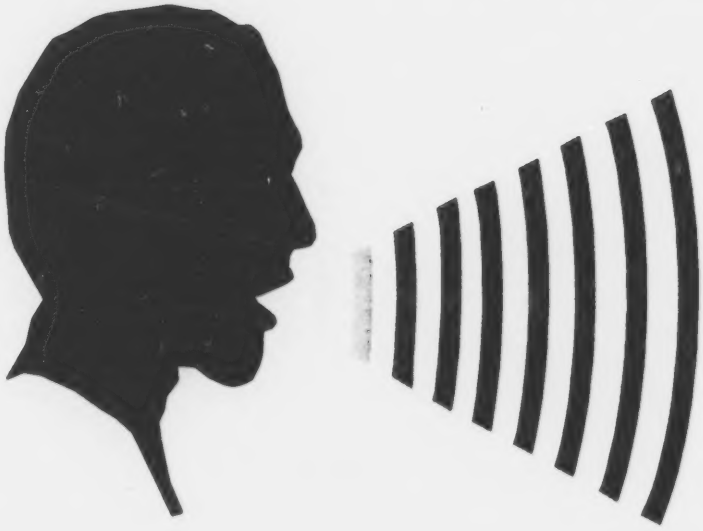
1. Lateral communication is the most difficult direction of communication.	True	False
2. Communicating with peers is not important.	True	False
3. Valuable ideas often originate at the lower levels of an organization.	True	False
4. Decisions are translated into actions by downward communication.	True	False
5. Upward communication is important only to the company, not the employee.	True	False
6. Cooperation and teamwork are promoted by good lateral communication.	True	False
7. Downward communication is useful for passing needed information to employees.	True	False
8. Communication is always oral.	True	False
9. Practicing the golden rule is the key to successful communication in the lateral (across) direction.	True	False
10. The tree directions of communications are up, down, and across.	True	False

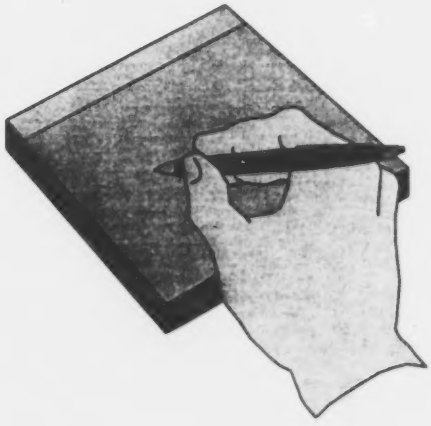
Attachment D
(Answer Key)

True or False

Read the following statements and decide if the statement is true or false. Place a circle around the correct answer.

1. Lateral communication is the most difficult direction of communication. — True (False)
2. Communicating with peers is not important. — True (False)
3. Valuable ideas often originate at the lower levels of an organization. — (True) False
4. Decisions are translated into actions by downward communication. — (True) False
5. Upward communication is important only to the company, not the employee. — True (False)
6. Cooperation and teamwork are promoted by good lateral communication. — (True) False
7. Downward communication is useful for passing needed information to employees. — (True) False
8. Communication is always oral. — True (False)
9. Practicing the golden rule is the key to successful communication in the lateral (across) direction. — (True) False
10. The three directions of communications are up, down, and across. — (True) False





Communication

"Making Requests"

Remember: Be Polite and Considerate of Others

What? When? Why?

Requests are persuasive communications. Often times when making requests, people tend to beat around the bush leading gradually to the point of the communication. Requests should be stated in an efficient and polite manner. You should state **what** is wanted in the first sentence or two and then state **when** and **why** it is wanted.

NOTE: Always be polite and considerate when making any request. Depending on the nature of the request, approval cannot always be granted.

Read the following scenarios and decide which way you think would be the best way for Bill to have made his request. In both scenarios, Bill's Aunt Mary died and he wants time off to attend the funeral. The company where Bill is employed has the same funeral leave policy as Fieldcrest Cannon. The policy allows paid time off for absence caused by the death of the following relatives: husband, wife, son, daughter, father, mother, brother, sister, grandfather, grandmother, grandson, granddaughter, father-in-law, mother-in-law, brother-in-law, and sister-in-law. However, Bill does not have a family and was raised by his Aunt Mary.

Scenario 1

Boy, it sure has been hot this summer. It is very hot working around these dye tubs and dryers. Even though it is so hot, I sure do like working here. You know, I like working here so much that in the year that I have been working here, I have never missed a day of work. I know that the company rule does not allow for you to take funeral leave to attend a funeral for an aunt. But, you know, I am an orphan and I don't have a mother or father, brother, or sister. So, I guess I don't qualify for paid time off. Did you ever meet my Aunt Mary? I lived with her from the time my parents died until I was grown. Well, anyway, Aunt Mary died yesterday. I don't suppose there is any way I could be off tomorrow to go to the funeral.

Scenario 2

My Aunt Mary died yesterday. Her funeral is tomorrow and I would really appreciate being allowed to take tomorrow off to attend. I realize that our company's funeral leave policy does not include time off for the funeral of an aunt. However, since I do not have a family, and was raised by Aunt Mary, I feel that my situation justifies an exception to the policy. I can make up the time lost by working extra hours, if necessary.

Which do you feel would have been the best way for Bill to have made his request? Why? State your answer in complete sentences.

"Disagreeing Agreeably"

Remember the Golden Rule: "Do Unto Others As You Would Have Them Do Unto You"

Do you always agree with the opinions of other people? It is seldom possible to be in complete agreement with our peers. There will often times be differences of opinion. One person should be able to disagree with another person without causing bad feelings. The following are ideas that will help you "disagree agreeably."

1. State the disagreement simply and factually, being careful not to use emotional words (mad, angry, disgusted).
2. Do not allow the difference of opinion to be personal.
3. Do not criticize the person.
4. Focus on the idea being discussed.

When you criticize someone, there is the feeling that the person's self-worth is being attacked. We all want to feel that our ideas are worthwhile. The surest way to destroy communication channels is to destroy the self-dignity of the person with whom you disagree. Do not criticize the ***person*** with whom you are in disagreement. Focus on the ***idea*** being discussed.

Which of the following statements do think would work best?

John, that is the dumbest idea I have ever heard.

John, I have an idea that might work.

Always concentrate on disagreeing with the ***idea***, not the ***person***. This will avoid hard feelings.

Handling Disagreements on the Job

Think of a time that you disagreed with a co-worker or with your working second hand.

How did you handle the disagreement?

Do you think you will handle it differently the next time a disagreement occurs?

List several of the suggestions that were made during our class in the space below.

COMMUNICATION WORD SEARCH

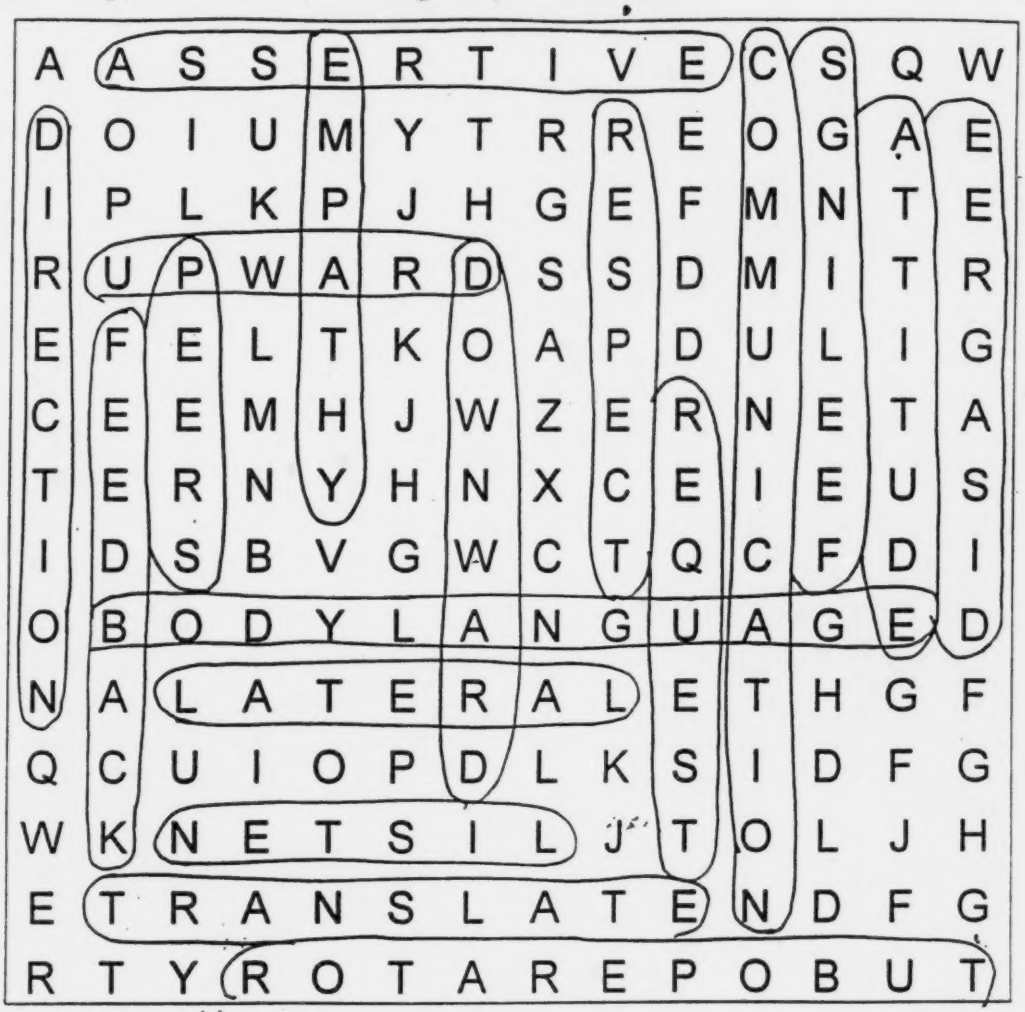
Find the words at the bottom of the page in the puzzle. Put a circle around each word. Be sure to look up, down, across, and diagonally for the words.

A	A	S	S	E	R	T	I	V	E	C	S	Q	W
D	O	I	U	M	Y	T	R	R	E	O	G	A	E
I	P	L	K	P	J	H	G	E	F	M	N	T	E
R	U	P	W	A	R	D	S	S	D	M	I	T	R
E	F	E	L	T	K	O	A	P	D	U	L	I	G
C	E	E	M	H	J	W	Z	E	R	N	E	T	A
T	E	R	N	Y	H	N	X	C	E	I	E	U	S
I	D	S	B	V	G	W	C	T	Q	C	F	D	I
O	B	O	D	Y	L	A	N	G	U	A	G	E	D
N	A	L	A	T	E	R	A	L	E	T	H	G	F
Q	C	U	I	O	P	D	L	K	S	I	D	F	G
W	K	N	E	T	S	I	L	J	T	O	L	J	H
E	T	R	A	N	S	L	A	T	E	N	D	F	G
R	T	Y	R	O	T	A	R	E	P	O	B	U	T

ASSERTIVE
ATTITUDE
BODY LANGUAGE
COMMUNICATION
DIRECTION
DISAGREE
DOWNWARD
EMPATHY
FEEDBACK
FEELINGS
LATERAL
LISTEN
PEERS
REQUEST
RESPECT
TRANSLATE
TUB OPERATOR
UPWARD

COMMUNICATION WORD SEARCH

Find the words at the bottom of the page in the puzzle. Put a circle around each word. Be sure to look up, down, across, and diagonally for the words.


A A S S E R T I V E C S Q W
D O I U M Y T R R E O G A E
I P L K P J H G E F M N T E
R U P W A R D S S D M I T R
E F E L T K O A P D U L I G
C E E M H J W Z E R N E T A
T E R N Y H N X C E I E U S
I D S B V G W C T Q C F D I
O B O D Y L A N G U A G E D
N A L A T E R A L E T H G F
Q C U I O P D L K S I D F G
W K N E T S I L J T O L J H
E T R A N S L A T E N D F G
R T Y R O T A R E P O B U T

- ASSERTIVE
- ATTITUDE
- BODY LANGUAGE
- COMMUNICATION
- DIRECTION
- DISAGREE
- DOWNWARD
- EMPATHY
- FEEDBACK
- FEELINGS
- LATERAL
- LISTEN
- PEERS
- REQUEST
- RESPECT
- TRANSLATE
- TUB OPERATOR
- UPWARD

Communications Two

NOTE TO INSTRUCTOR

Communications (Lesson Two) has an alternate lesson plan. The lessons are the same except for the Motivational Activity. Both lesson plans are included. The instructor has the option of using either lesson plan.

Module: Communication - Lesson Two **Overall Time 50 min**
Job Title: Dye Tub Operators **Page 1 of 2**

Specific Instructional Objective	Learning Activities	Time	Resources/ Materials	Evaluation Process
Upon completion of the lesson. learners will be able to list and describe with 100% accuracy. five ways to improve their communication skills.	**Motivational Activity:** Display overhead transparency "What do you see?". Display overhead transparency "Which circle is larger?" Discuss perception.	5 min	Transparency "What do you see?" "Which circle is larger?"	Teacher observation
	Pre-Assessment: Distribute handout "Rate Yourself" (Attach. A)	5 min	Attachment A	Students will score their own survey using scale at bottom of page
	Teach Vocabulary: Distribute Attach. B. Use overhead transparency (Attach. B) to present and discuss vocabulary words.	5 min	Attachment B	Teacher observation of understanding
	Instructional Activities: Use overhead transparency (Attach. C) and discuss 5 steps to better communication	25 min.	Attachment C	
	Distribute Attachments D, E, F, and G. Discuss hearing and listening. Complete worksheet G		Attachments D. E. F, and G	

Specific Instructional Objective	Learning Activities	Time	Resources/ Materials	Evaluation Process
	Instructional Activities: (Continued) Distribute Attachments H and I. Discuss body language. Divide into groups and complete Attachment I.		Attachments H, and I	
	Again using Attachment C, discuss step 3 (Empathy)		Attachment C	
	Using Attachment C, discuss step 4 (Assertiveness)		Attachment C	
	Distribute Attach. J. Using overhead transparency (Attach. J), discuss importance of treating others with respect.	10 min	Attachment J	Teacher observation of responses.
	Evaluation: Ask for volunteers to name the five steps discussed during the class and list these on a flip chart or board.		Flip chart or dry erase board and markers or chalk board and chalk.	Teacher observation.
	Distribute Attachment K. Allow learners to evaluate ways to improve their communication based on survey completed at beginning of class.		Attachment K	

FIELDCREST CANNON

Job Title: Dye House Operator

Module: Communication Skills
Lesson Two

General Instructional Objective: Identify methods of achieving better communication

Specific Instructional Objective: Upon completion of the lesson, learners will be able to list and describe with 100% accuracy five ways to improve their communication skills.

Motivational Activity: Distribute handout "What do you see?" Show overhead and ask for volunteers to describe what they see in the picture.

Did anyone see angels?
Did anyone see bats or devils?

Distribute handout "Which circle is larger?" Show overhead and ask for volunteers to decide which circle appears to be the largest.

Discuss the fact that different people see things differently. What is seen in the picture depends on focus. Point out that in communication, the receiver may interpret the sender's message in a different way than it was intended.

It is important to remember that messages consist of ***feelings*** and ***attitudes***, in addition to facts. Instructor will stress that we communicate in many different ways.

Pre-Assessment: Distribute handout (Attachment A) "Rate Yourself".

Teach Vocabulary: Instructor and learners go over and discuss the meaning of vocabulary words. Distribute Attachment B. Instructor will use overhead transparency to present vocabulary words. (Attachment B).

Empathy	Attitude	Body Language
Feedback	Assertive	

Instructional Activities:

Distribute Attachment C. Instructor will use overhead transparency (Attachment C) listing 5 steps to better communication and discuss with learners ways to improve their communication skills. Discussion will include how tub operators might interact with other tub operators as well as with working second hands. In guiding the discussion, instructor might ask the following question:

Do you try to put yourself in the other person's place to see how he/she might feel?
Are you conscious of your attitude toward the other person?
Are you assertive?
Do you pay attention to body language?
Do you listen for feedback? Do you provide feedback?

Distribute Attachment D. Read aloud "Did You Know". Allow time for comments. Instructor will discuss with learners the difference in ***hearing*** and ***listening.***

Distribute Attachment E. Discuss with learners the process of effective listening to learn a procedure. Read the eight points listed. Discuss how these eight points are important when learning a new procedure, such as operation of the new equipment in the dye house. New procedures were learned when the new dye tubs were installed and new procedures are continuing to be introduced as additional new equipment is being installed.

Distribute Attachment F, and lead discussion on 3 types of distractions and 3 levels of listening intensity. Ask for volunteers to give their own examples.

Distribute Attachment G. Allow learners time to complete the worksheet (Attachment G). Following completion of Attachment G, discuss learners' answers.

Distribute Attachment H. Discuss second step to better communication (Body Language). Instructor may wish to use overhead (Attachment C) to reinforce the 5 steps. Ask for volunteers to tell what the gestures mean. Discuss how different gestures may have different meaning to different people.

Distribute Attachment I. Choose two or three of the gestures listed on Attachment I and demonstrate these to the class. Following the demonstration, allow learners a few minutes to try to complete the worksheet. Instructor will then read each gesture and ask for volunteers to give correct answers. Learners will correct their own papers.

Instructor will again use overhead transparency (Attachment C) and discuss step 3 (Develop the trait of empathy) and step 4 (Use assertiveness). Refer learners to vocabulary words (Attachment B) to review the meaning of empathy. Point out that when you understand the other person's point of view, you will improve your communication with that person.

Refer learners to vocabulary words (Attachment B) for meaning of assertiveness. Reinforce the idea that assertiveness means being direct, open, and honest, but not violating the rights of others. It does not mean you should be aggressive in getting your message across.

Distribute Attachment J. Instructor will use overhead transparency (Attachment J). Discuss with learners the importance of treating others with respect.

Evaluation: Ask for volunteers to name the five steps to better communication. Use flip chart or dry erase board to list the 5 steps.

Distribute Attachment K. Ask learners to refer to Attachment A (Rate Yourself) that was completed at beginning of class. In the space provided, ask learners to list ways they could improve communication with co-workers and working second hands.

ALTERNATE LESSON PLAN

Module: Communication - Lesson Two **Overall Time 50 min**
Job Title: Dye Tub Operators **Page 1 of 2**

Specific Instructional Objective	Learning Activities	Time	Resources/ Materials	Evaluation Process
Upon completion of the lesson, learners will be able to list and describe with 100% accuracy, five ways to improve their communication skills	**Motivational Activity:** Picture from magazine of people engaged in an activity. Discuss how the message changed as it was passed along to the next person.	5 min	Magazine picture	Teacher observation
	Pre-Assessment: Distribute handout "Rate Yourself" (Attach. A)	5 min	Attachment A	Students will score their own survey using scale at bottom of page
	Teach Vocabulary: Distribute Attach. B. Use overhead transparency (Attach. B) to present and discuss vocabulary words.	5 min	Attachment B	Teacher observation of understanding
	Instructional Activities: Use overhead transparency (Attach. C) and discuss 5 steps to better communication	25 min.	Attachment C	
	Distribute Attachments D, E, F, and G. Discuss hearing and <u>listening.</u> Complete worksheet G		Attachments D, E, F, and G	

Specific Instructional Objective	Learning Activities	Time	Resources/ Materials	Evaluation Process
	Instructional Activities: (Continued) Distribute Attachments H and I. Discuss body language. Divide into groups and complete Attachment I.		Attachments H, and I	
	Again using Attachment C, discuss step 3 (Empathy)		Attachment C	
	Using Attachment C, discuss step 4 (Assertiveness)		Attachment C	
	Distribute Attach. J. Using overhead transparency (Attach. J), discuss importance of treating others with respect.	10 min	Attachment J	Teacher observation of responses.
	Evaluation: Ask for volunteers to name the five steps discussed during the class and list these on a flip chart or board.		Flip chart or dry erase board and markers or chalk board and chalk.	Teacher observation.
	Distribute Attachment K. Allow learners to evaluate ways to improve their communication based on survey completed at beginning of class.		Attachment K	

FIELDCREST CANNON

Job Title: Dye House Operator

Module: Communication Skills
Lesson Two

General Instructional Objective: Identify methods of achieving better communication

Specific Instructional Objective: Upon completion of the lesson, learners will be able to list and describe with 100% accuracy five ways to improve their communication skills.

Motivational Activity: Picture from magazine of people engaged in an activity.

It is important to understand the necessity of accurately sending messages to different people. One person will be given a picture of people engaged in an activity. This person will study the picture for a few minutes without showing it to anyone else. He/she will then describe the activity in the picture to another person. That person will in turn tell another person what was told to him/her. This will continue until everyone has received the message. The last person to receive the message will tell the group what was told to him. Show the picture to the group.

Discuss how the message changed as it was passed along to the next person.

Were details left out?
Were details added?
Were details changed?
What personal interpretations of the description were added?

It is important to remember that messages consist of ***feelings*** and ***attitudes***, in addition to facts. Instructor will stress that we communicate in many different ways.

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Pre-Assessment: Distribute handout (Attachment A) "Rate Yourself".

Teach Vocabulary: Instructor and learners go over and discuss the meaning of vocabulary words. Distribute Attachment B. Instructor will use overhead transparency to present vocabulary words. (Attachment B).

Empathy	Attitude	Body Language
Feedback	Assertive	

Instructional Activities:

Distribute Attachment C. Instructor will use overhead transparency (Attachment C) listing 5 steps to better communication and discuss with learners ways to improve their communication skills. Discussion will include how tub operators might interact with other tub operators as well as with working second hands. In guiding the discussion, instructor might ask the following question:

Do you try to put yourself in the other person's place to see how he/she might feel?
Are you conscious of your attitude toward the other person?
Are you assertive?
Do you pay attention to body language?
Do you listen for feedback? Do you provide feedback?

Distribute Attachment D. Read aloud "Did You Know". Allow time for comments. Instructor will discuss with learners the difference in ***hearing*** and ***listening.***

Distribute Attachment E. Discuss with learners the process of effective listening to learn a procedure. Read the eight points listed. Discuss how these eight points are important when learning a new procedure, such as operation of the new equipment in the dye house. New procedures were learned when the new dye tubs were installed and new procedures are continuing to be introduced as additional new equipment is being installed.

Distribute Attachment F, and lead discussion on 3 types of distractions and 3 levels of listening intensity. Ask for volunteers to give their own examples.

Distribute Attachment G. Allow learners time to complete the worksheet (Attachment G). Following completion of Attachment G, discuss learners' answers.

Distribute Attachment H. Discuss second step to better communication (Body Language). Instructor may wish to use overhead (Attachment C) to reinforce the 5 steps. Ask for volunteers to tell what the gestures mean. Discuss how different gestures may have different meaning to different people.

Distribute Attachment I. Choose two or three of the gestures listed on Attachment I and demonstrate these to the class. Following the demonstration, allow learners a few minutes to try to complete the worksheet. Instructor will then read each gesture and ask for volunteers to give correct answers. Learners will correct their own papers.

Instructor will again use overhead transparency (Attachment C) and discuss step 3 (Develop the trait of empathy) and step 4 (Use assertiveness). Refer learners to vocabulary words (Attachment B) to review the meaning of empathy. Point out that when you understand the other person's point of view, you will improve your communication with that person.

Refer learners to vocabulary words (Attachment B) for meaning of assertiveness. Reinforce the idea that assertiveness means being direct, open, and honest, but not violating the rights of others. It does not mean you should be aggressive in getting your message across.

Distribute Attachment J. Instructor will use overhead transparency (Attachment J). Discuss with learners the importance of treating others with respect.

Evaluation: Ask for volunteers to name the five steps to better communication. Use flip chart or dry erase board to list the 5 steps.

Distribute Attachment K. Ask learners to refer to Attachment A (Rate Yourself) that was completed at beginning of class. In the space provided, ask learners to list ways they could improve communication with co-workers and working second hands.

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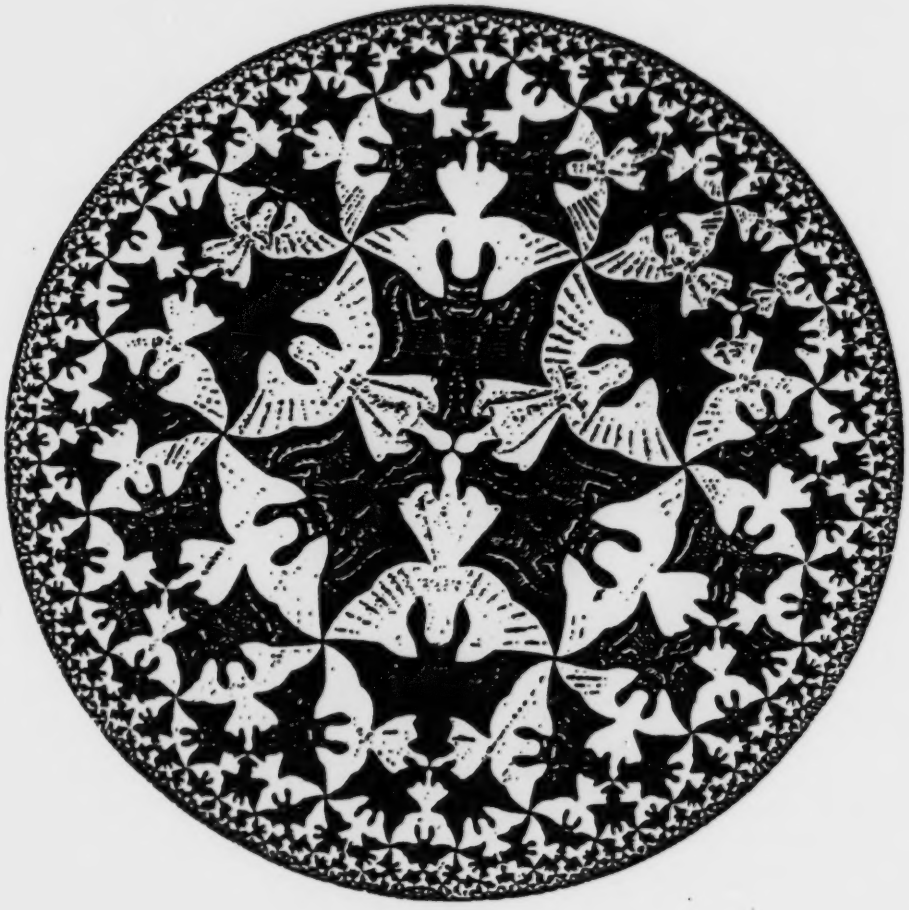
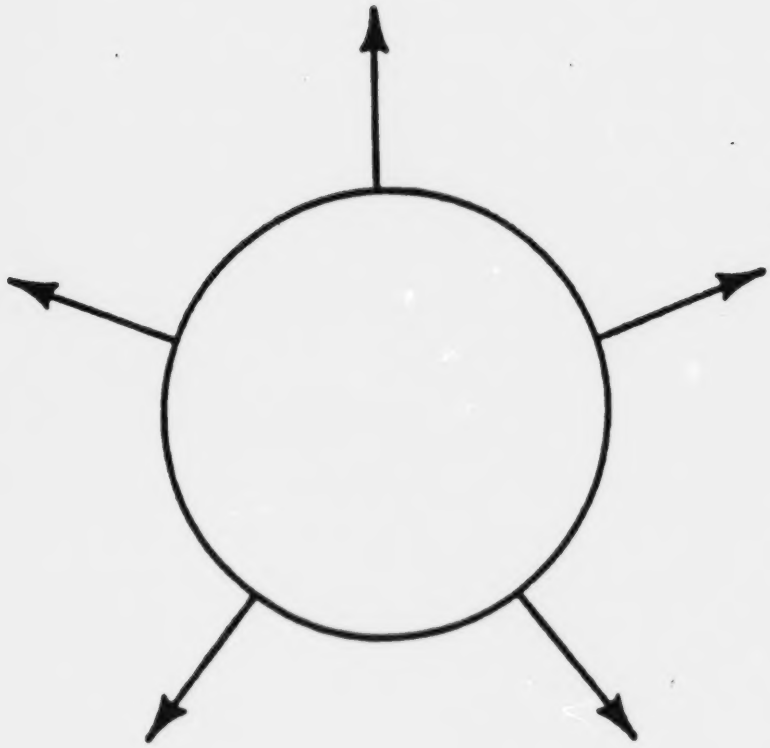
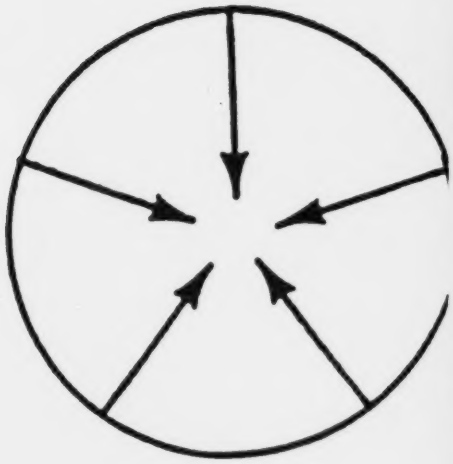
LOOK AT THE PICTURE BELOW. WHAT DO YOU SEE?



Source: Romanek, Elizabeth, Communication Skills that Work, Book Two, Contemporary Books, Chicago, Illinois, 1991.

LOOK AT THE CIRCLES BELOW.
WHICH CIRCLE IS LARGER?





How Well Do You Communicate?

Communication is giving and receiving of information. You can communicate in many different ways. You are communicating when you give or receive messages, ideas, or feelings. Communication can be written, verbal, or nonverbal. Effective communication only takes place when the receiver understands the sender's message. Rate how well you feel you communicate by reading each statement and choosing the number that best describes the way you communicate.

	Never	Seldom	Sometimes	Usually	Always
1. I ask questions when I do not understand.	1	2	3	4	5
2. I watch for body language.	1	2	3	4	5
3. I give clear directions.	1	2	3	4	5
4. My requests are respectful.	1	2	3	4	5
5. I state my opinions effectively.	1	2	3	4	5
6. I appreciate other people's opinions.	1	2	3	4	5
7. I appreciate constructive criticism.	1	2	3	4	5
8. I express a genuine interest when listening to others.	1	2	3	4	5
9. I allow others to speak without interrupting.	1	2	3	4	5
10. I avoid becoming hostile when I disagree with a co-worker.	1	2	3	4	5

Total your responses. If your score is:

46-50	Excellent	31-35	Fair
41-45	Good	26-30	Needs Improvement
36-40	Average	25 or less	Serious Problem Exists

Attachment B
(Transparency)

VOCABULARY WORDS

Empathy – Showing you understand and relate to another's feelings without making his/her feelings or problems your own; being sincerely interested in and concerned about other people.

Attitude – A feeling or emotion toward a fact or a statement.

Feedback – The transmission of evaluative information to the original source.

Assertive – Direct, open, and honest communication that does not violate the rights of others.

Body Language – Nonverbal communication utilizing details such as facial expression, gestures, eye contact, touching, and space to give meaning to messages.

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Body Language – Nonverbal communication utilizing details such as facial expression, gestures, eye contact, touching, and space to give meaning to messages.

5 STEPS TO BETTER COMMUNICATION

1. **Be a good listener**

2. **Be aware of body language**

3. **Develop the trait of empathy**

4. **Use assertiveness**

5. **Treat others with respect**

DID YOU KNOW?????

The average person spends 8.4% of communication time writing, 13.3% reading, 23% speaking, and 55% listening.

Source: Schultz, Duane P., Sydney Ellen Schultz, Psychology and Work Today, Sixth Edition, Macmillian Company, New York, NY, 1994.

It has been proven that the ability to listen is one of the most important factors for success on the job. Listening is important in all jobs at all levels in an organization.

One problem is that people confuse ***listening*** with ***hearing***. These are two completely different processes. Many problems and misunderstandings occur because people say they are listening when they are really only hearing. They hear sounds, but remember very little of what they hear because they are not consciously listening.

Hearing is a mechanical process and does not involve the active use of the brain. A person can hear noise but does not have to think about it. Hearing does not require mental concentration.

Listening requires the active use of the brain. Not only must a person hear the sound, but must evaluate and understand it. Listening requires mental concentration.

Research studies have shown the following:

- Most people listening to a 10 minute speech retain only 25% of what they hear.
- People remember only 50% of what was said immediately after hearing it.
- Two months after listening to a presentation, a person will retain only 25% of the information.
- In the first 8 hours after listening to a new idea, people forget from 1/3 to 1/2 of what was learned.

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Listening to Learn a Procedure

- Focus your attention.
- Identify the topic.
- Summon up your background knowledge.
- Grasp the main ideas.
- Listen for the order of the steps.
- Visualize the message.
- Check your understanding.
- Take notes.

Source: Romanek, Elizabeth, Communication Skills that Work, Book Two, Contemporary Books, Chicago, IL, 1991.

Listening to Learn a Procedure

- Focus your attention. Screen out distractions and control daydreaming.
- Identify the topic. Find out the procedure to be explained.
- Summon up your background knowledge. Keep in mind what you may already know about the procedure.
- Grasp the main ideas. Be sure you hear and understand each step of the procedure.
- Listen for the order of the steps. Usually, the speaker will present the steps in the order in which they must be done. The speaker will use words like *First* and *Next* as signals. However, some steps may be presented out of order. Be especially alert when the speaker says something like "Before you do this step, you should..." or "Do not complete this step unless you have..."
- Visualize the message. As you listen, try to picture each step of the procedure. Often the speaker will actually demonstrate the process. In this case, try to form and store away mental pictures of the demonstration.
- Check your understanding. As questions when you are not sure you understand a step. When you have heard all the instructions, restate them in your own words.
- Take notes. Whenever possible, briefly jot down the steps of the procedure and any points the speaker emphasizes.

Source: Romanek, Elizabeth, Communication Skills that Work, Book Two, Contemporary Books, Chicago, IL, 1991.

The following three types of distractions can affect listening:

External distractions - This refers to the physical environment. It may be too hot or cold, too noisy, or the person speaking may be too far away.

Internal distractions - This refers to internal conflict that causes concentration to be interrupted. An example of an internal distraction would be a argument or problem at home that may hinder your ability to concentrate.

Speaker distractions - The characteristics of the speaker can affect your ability to concentrate. If the speaker speaks in a monotone or is not well organized it will affect your level of listening. These distractions can cause you to become a ***hearer*** rather than a ***listener***.

There are three levels of listening intensity:

Casual listening - People engage in casual listening most of the time. An example would be listening to music on the radio or casual conversation with a friend.

Attentive listening - People listen attentively when they really need to learn something or if something very important is being said. An example of attentive listening would be listening to your supervisor describe how you could earn more money. You would listen attentively!

Critical listening - This is the most demanding degree of listening. The listener must not only concentrate, but he or she must analyze and evaluate what is being said. An example of this type of listening would be listening to someone explain the pros and cons of two different insurance plans being offered to company employees. After hearing the presentation, he or she would be expected to choose the plan that best suits his/her needs.

Now Let's Practice...

Write down an example of each of the three types of distractions that may occur on your job (External, Internal, and Speaker).

1. **External** – _____

_____

2. **Internal** – _____

_____

3. **Speaker** – _____

_____

List three situation where you would use the different levels of listening (Casual listening, Attentive listening, and Critical Listening).

1. **Casual** – _____

_____

2 **Attentive** – _____

_____

3. **Critical** – _____

_____

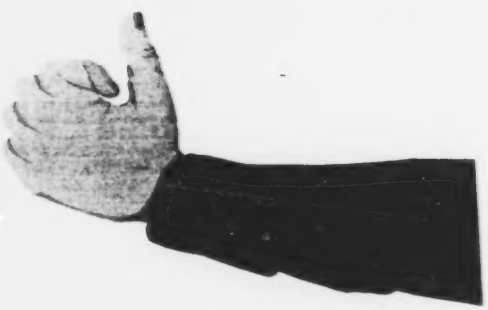
Although it has been proven that listening is the most important of all the communication skills, there are other skills that help improve communication.

BODY LANGUAGE

Actions sometimes speak louder than words. Paying attention to gestures of others and becoming aware of the your own body language will help improve your ability to communicate.

Can you identify these gestures?

_____ _____



_____ _____

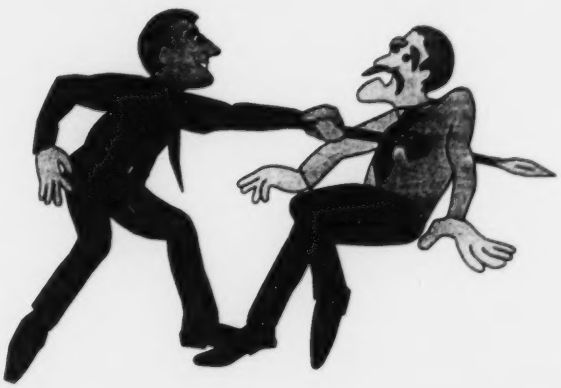
Match the following gestures with the correct meaning. Place the letter of the correct meaning in the space provided.

Gesture	Meaning
____ Clenched fist	A. I do not like what I am hearing; a negative reaction
____ Touching nose with index finger	B. Nervous and tense
____ Rubbing the ear or side of the face	C. Under stress
____ Arms folded high across the chest	D. Bored; impatient
____ Tapping fingers on table	E. Unsure; thinking things over
____ Rubbing back of neck with hand	F. Doubt what is being said
____ Head resting on palm of hand	G. Accusing someone
____ Pointing index finger	H. Defensive; closed mind
____ Legs crossed	I. Tired or thinking deeply
____ Rubbing hands together	J. Anticipating something good is about to happen

Match the following gestures with the correct meaning. Place the letter of the correct meaning in the space provided.

	Gesture	Meaning
C	Clenched fist	A. I do not like what I am hearing; a negative reaction
A	Touching nose with index finger	B. Nervous and tense
F	Rubbing the ear or side of the face	C. Under stress
H	Arms folded high across the chest	D. Bored; impatient
D	Tapping fingers on table	E. Unsure; thinking things over
E	Rubbing back of neck with hand	F. Doubt what is being said
I	Head resting on palm of hand	G. Accusing someone
G	Pointing index finger	H. Defensive; closed mind
B	Legs crossed	I. Tired or thinking deeply
J	Rubbing hands together	J. Anticipating something good is about to happen

Do Unto Others As You Would Have Them Do Unto You



With practice, you can improve your communication skills!

Look at the handout "Rate Yourself". If your answers to any of the questions were seldom or never, reread those statements. What steps could you take to change those habits?

In the space below, list some ways you feel you could improve communication with co-workers and working second hands.

1. _____

2. _____

3. _____

4. _____

5. _____

Now that you have identified some areas of communication in which you feel you need to improve, try to put some of the ideas we have discussed into practice!

General Safety

Module: Safety **Overall Time 50 min**

Job Title: Dye Tub Operators **Page 1 of 2**

Specific Instructional Objective	Learning Activities	Time	Resources/ Materials	Evaluation Process
Employees will be able to read and interpret general safety procedures, signs, and posters with 100% accuracy.	**Motivational Activity:** Divide class into groups and distribute paper bag containing several unknown articles to each group.	10 min	Paper bags, several small articles such as silly putty, yarn, string gum, etc.	Observation
	Vocabulary: Class will work together to obtain definitions (Attach A). Students and teacher will share definitions orally and agree or disagree by thumbs up or thumbs down.	10 min	Overhead, transparencies, Attach A., index cards, markers.	Observation
	Instructional Activities: Distribute Attachment B. After students read material lead discussion on material read.	30 min	Pencil or Pen Attachment B	
	Distribute Attachment C. After students complete, the class will review answers orally.		Attachment C	
	Distribute safety guidelines Attachment D. Brainstorm for suggestions.		Attachment D Blackboard/ markers	
	Distribute Attachment E. Students will work the safety worksheets in small groups.		Attachment E	

Module: Safety
Job Title: Dye Tub Operators

Specific Instructional Objective	Learning Activities	Time	Resources/ Materials	Evaluation Process
	Distribute Attachment F. Students will independently work safety worksheet.		Attachment F	
	Distribute Attachment G. Students will work the safety crossword if time allows.		Attachment G	Teacher will observe students participation and understanding

Job Title: Dye House Operators

Module: Safety

General Instructional Objective: Read and interpret basic safety procedures at job site.

Specific Instructional Objective: Employees will be able to read and interpret general safety procedures, signs, and precautions with 100% accuracy.

Motivational Activity:

The instructor will divide class into groups and distribute one paper bag containing several unknown articles to each group. Each employee will put their hand in the bag and try to guess what the bag contains.

Employees will then have a discussion on what they believed to be in the bag. The instructor will show employees the actual articles that are in the bag. (Examples of articles in bag - silly putty, emery board, licorice, string, gum, etc.). Discuss how employees felt about putting their hand into an unknown area.

The instructor will explain that we all need to be aware of potential hazards at the workplace. Stress the fact that putting your hands freely into an unknown environment could be hazardous to you or your fellow employees.

Vocabulary:

Instructor will distribute vocabulary words and definitions (Attachment A) on index cards. Each student will receive an index card. The students will match their index card with correct word or definition. The class will display the words and definitions on the wall. This activity will be done as a whole group activity.

Instructional Activities:

Distribute a copy of the Dye Tub Operators Safety Checks and Procedures Chart (Attachment B) to each student. Explain that this safety sheet is specifically designed for the tub operators. Have students read the Dye Tub Operators Safety Checks and Procedures sheet silently. Upon completion of reading material, distribute handout questions that relate to the safety of Dye Tub Operators (Attachment C). Allow time for students to work in pairs to complete worksheets.

Dye House Operators: Safety Lesson 1 (page 2)

Distribute safety guidelines (Attachment D). Students will read material independently. Brainstorm in small groups for ways to reduce accidents. The teacher will list ideas on the board. The teacher will explain and reinforce the concept that prevention, precaution, and awareness are all necessary to maintain a safe work environment. Have students work in small groups to complete teacher made activities that pertain to safety guidelines and warning signs used throughout the workplace. (Attachments E, pages 1, 2, and 3).

Give each student a teacher-made activity (Attachment F) to complete using work place vocabulary safety words. Upon completion of activity, students and instructor will review the worksheet to reinforce and evaluate comprehension. If time allows distribute crossword puzzle (Attachment G) to be completed as reinforcement of vocabulary safety words.

Evaluation:

The teacher will evaluate the lesson according to class participation observation.

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Glossary

Protective Gear

Warning Labels

Horseplay

Protection

Precaution

Safety

Stress

Housekeeping

Glossary

Protective Gear - Clothing and equipment that protects a worker from hazards.

Warning Labels - Information on a label that tells what may happen if a product is not used correctly.

Precaution - A way of being careful before something dangerous happens.

Safety - to avoid danger or accidents

Stress - body or mental tension

Protection - to shield from injury or harm

Horseplay - rough or boisterous play

Housekeeping - to perform routine duties of maintaining clean work area

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Safety Checks and Procedures Chart

Because of the proprietary nature of this material, attachment B could not be included for distribution.

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Attachment C

DIRECTIONS: Answer the following questions in the space provided.

1. Explain the reason why some machines have two way trip buttons installed on the machinery. _____

_____

_____

2. Describe a potential hazard that you have seen in your work area. _____

_____

_____

_____

3. Describe the proper method to use when lifting a heavy object by hand. _____

_____

_____

_____

4. It is a requirement to wear leather, flat, closed toed shoes on the plant floor. Explain the reason why you believe this is a requirement. _____

_____

_____

_____

Attachment C
Answer Sheet

DIRECTIONS: Answer the following questions in the space provided.

1. Explain the reason why some machines have two way trip buttons installed on the machinery. To protect the limbs and body parts of the employee. To avoid mashed, cut or injured limbs.

2. Describe a potential hazard that you have seen in your work area. steam, chemicals, blown hoses, moving equipment.

3. Describe the proper method to use when lifting a heavy object by hand. Use your leg muscles -- do not twist or turn during the lift.

4. It is a requirement to wear leather, flat, closed toed shoes on the plant floor. Explain the reason why you believe this is a requirement. To avoid cuts, heavy object from injuring your feet. To avoid slips or falls.

GUIDELINES FOR REDUCING INJURIES AT THE JOB SITE

More than 200,000 people in the United State are injured on the job from slips, trips and falls every year. Slips are caused whenever there is too little friction or traction between your feet and the surface you are walking on. Often moving across a change in surfaces such as walking from a carpeted floor to a vinyl or hardwood floor can cause someone to slip. Trips occur whenever your foot strikes an object and your momentum causes you to be thrown off balance.

To avoid trips and falls you should make sure that:

Your view is not obstructed

Your work area is free from clutter

Your work area has sufficient lighting

You wear appropriate footwear

To avoid the chance of injury while working around wet surfaces you should:

Take shorter steps to keep your center of balance under you.

Do not walk to fast in a wet area

Walk with your feet pointed slightly outward, this creates a stable base.

To avoid back injuries when lifting you should:

Face the object squarely

Get as close as possible to the object

Squat down, bending your knees

Grip the object firmly

Use your legs to bring you to a standing position

Make the lift smoothly

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GUIDELINES FOR PERSONAL PROTECTIVE EQUIPMENT

Hearing protection is needed when there is a steady or impulse noise which makes it difficult to communicate verbally. A good rule of thumb to know whether you need hearing protection is if you have to raise your voice to be heard by someone less than two feet await.

Earplugs - Offer protection, foam earplugs that fit snugly are the most effective.

You need to protect your ears when:

The sounds in your work area are irritating.

You need to raise your voice to be heard by someone closer than two feet away.

Hearing protection is a necessary defense against hearing loss when you work around loud noise. Noise can slowly destroy your hearing painlessly and without you knowing it.

Footwear - Proper footwear helps prevent injuries on the job.

To avoid foot injuries all associates are required to wear closed toe shoes. High heeled shoes are not allowed on the mill floor. Shoes made out of leather are required to reduce the risk of injury.

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SAFETY GUIDELINES TO PREVENT BACK INJURIES

Face the object squarely and get as close to it as you can.

Balance yourself solidly, with your feet slightly apart.

Squat down, bending your knees.

Keep your back as straight and upright as possible.

Grip the object firmly.

Tighten your abdomen.

Use your legs to bring you to a standing position, keeping your back straight.

Make the lift smoothly and under control.

Don't lift object over your head.

Don't twist your body when lifting or setting an object down.

Pace yourself to avoid fatigue.

Don't reach over something to life a load.

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Dye Tub Operator

Dye tub operators are exposed to many different types of safety hazards. List three potential safety hazards that you are exposed to while you are performing your job.

_____

_____

_____

Number the following activities in order in which they occur.

_____ a. Clean lint filter

_____ b. Load tub by pulling cord on bottom of bag.

_____ c. Select dye run and push to tub.

_____ d. Unload rugs by tilting machine.

_____ e. Go and get pre-measured dye.

_____ f. Start machine

_____ g. Read dye ticket

BEST COPY AVAILABLE

Dye Tub Operator

Dye tub operators are exposed to many different types of safety hazards. List three potential safety hazards that you are exposed to while you are performing your job.

Chemicals

Steam

Pinch Points

Number the following activities in order in which they occur.

1	a. Clean lint filter
5	b. Load tub by pulling cord on bottom of bag.
2	c. Select dye run and push to tub.
7	d. Unload rugs by tilting machine.
4	e. Go and get pre-measured dye.
6	f. Start machine
3	g. Read dye ticket

DIRECTIONS: Read each statement below then circle the correct answer.

SAFETY WORKSHEET

1. True False The muscles of the abdomen help support the back.
2. True False You should exhale completely before lifting anything.
3. True False Pushing a load is easier on the back than pulling one.
4. True False For a safe lift, the load should be held as close to you as possible.
5. True False Hearing loss is a common workplace injury.
6. True False Most of the power for lifting should come from your leg muscles.
7. True False When lifting an object, you should bend your knees but not your waist.
8. True False For personal protective equipment to protect you, it must be used properly.
9. True False Heavy objects should be stored off the floor when possible.
10. True False Permanent hearing loss is likely to occur only when someone is exposed to painful noise levels.
11. True False Poor lighting can create a safety hazard.
12. True False Signs in your workplace requiring hearing protection are only for people who have hearing problems.
13. True False Exposure to unwanted sound can be controlled.

DIRECTIONS: Read each statement below then circle the correct answer.

SAFETY WORKSHEET

1.	**True**	False	The muscles of the abdomen help support the back.
2.	**True**	False	You should exhale completely before lifting anything.
3.	**True**	False	Pushing a load is easier on the back than pulling one.
4.	**True**	False	For a safe lift, the load should be held as close to you as possible.
5.	**True**	False	Hearing loss is a common workplace injury.
6.	**True**	False	Most of the power for lifting should come from your leg muscles.
7.	**True**	False	When lifting an object, you should bend your knees but not your waist.
8.	**True**	False	For personal protective equipment to protect you, it must be used properly.
9.	**True**	False	Heavy objects should be stored off the floor when possible.
10.	**True**	False	Permanent hearing loss is likely to occur only when someone is exposed to painful noise levels.
11.	**True**	False	Poor lighting can create a safety hazard.
12 .	True	**False**	Signs in your workplace requiring hearing protection are only for people who have hearing problems.
13.	**True**	False	Exposure to unwanted sound can be controlled.

MATCHING ACTIVITY
WARNING SIGNS AND MESSAGES

Directions: Place letter in blank next to corresponding meaning.

_____ **Ear Protection Required**

_____ **Emergency Exit**

_____ **Eye Protection Required**

_____ **Danger Confined Space**

_____ **Lockout-Tagout**

_____ **Pinch Points**

_____ **Caustic**

_____ **Acids**

_____ **Hot Surface**

_____ **Slippery When Wet**

A

B

C

D

E

F

G

H

I

J

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MATCHING ACTIVITY
WARNING SIGNS AND MESSAGES

Directions: Place letter in blank next to corresponding meaning.

G	Ear Protection Required	A	
I	Emergency Exit	B	
E	Eye Protection Required	C	
H	Danger Confined Space	D	
J	Lockout-Tagout	E	
D	Pinch Points	F	
B	Caustic	G	
C	Acids	H	
F	Hot Surface	I	
A	Slippery When Wet	J	

READING COMPREHENSION

Safety Worksheet

The following words pertain to your job safety:

Chemicals	Protective gear	Warning Labels	Hazard
Pinch Point	Steam	Precaution	Caustic
Housekeeping	LockOut-Tag Out		

DIRECTIONS: Read the definitions below. Place the vocabulary word on the line in front of the correct definition.

1. _____ A way of being careful before something dangerous happens.

2. _____ Clothing and equipment that protects a worker from hazards.

3. _____ A substance with specific qualities that is combined with other substances.

4. _____ Danger zones that are formed between a moving object and a stationary object, or between two continuously moving objects.

5. _____ A danger, a risk.

6. _____ Information on a label that tells what may happen if the product is not used correctly.

7. _____ A vapor arising from a heated substance.

8. _____ To perform routine duties of maintaining clean work areas.

9. _____ Capable of destroying by chemical action.

10. _____ Necessary whenever service or maintenance is performed around any machine where an injury may occur.

Attachment F

Answer Key

READING COMPREHENSION

Safety Worksheet

The following words pertain to your job safety:

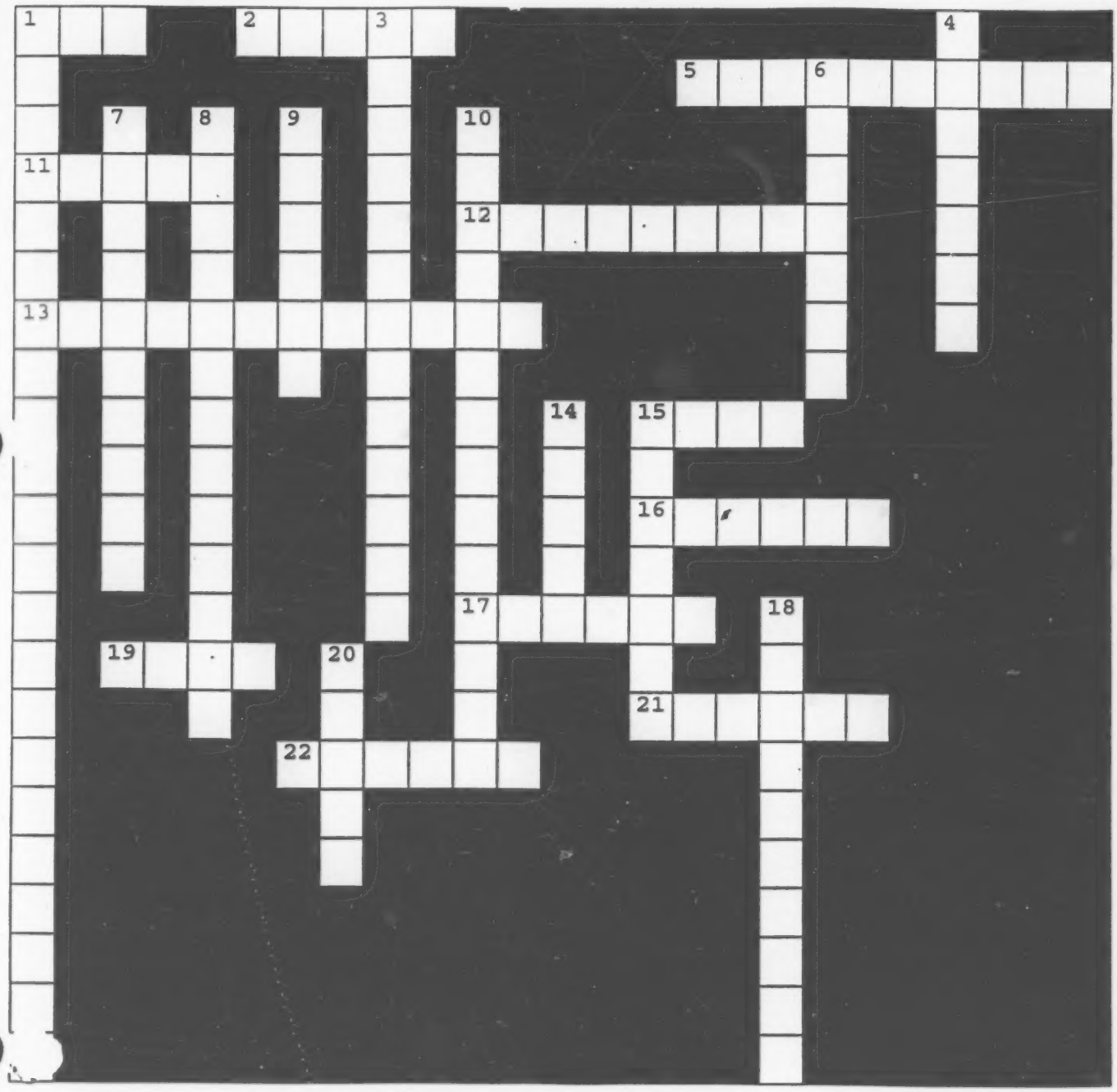
Chemicals	Protective gear	Warning Labels	Hazard
Pinch Point	Steam	Precaution	Caustic
Housekeeping	LockOut-Tag Out		

DIRECTIONS: Read the definitions below. Place the vocabulary word on the line in front of the correct definition.

1. **Precaution**	A way of being careful before something dangerous happens.
2. **Protective Gear**	Clothing and equipment that protects a worker from hazards.
3. **Chemicals**	A substance with specific qualities that is combined with other substances.
4. **Pinch Points**	Danger zones that are formed between a moving object and a stationary object, or between two continuously moving objects.
5. **Hazard**	A danger, a risk.
6. **Warning Labels**	Information on a label that tells what may happen if the product is not used correctly.
7. **Steam**	A vapor arising from a heated substance.
8. **Housekeeping**	To perform routine duties of maintaining clean work areas.
9. **Caustic**	Capable of destroying by chemical action.
10. **Lock-Out -- Tag Out**	Necessary whenever service or maintenance is performed around any machine where an injury may occur.

SAFETY CROSSWORD PUZZLE

DIRECTIONS: USING THE ATTACHED DEFINITIONS, PLACE THE CORRECT WORD IN THE APPROPRIATELY NUMBERED PLACE.



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ACROSS

1. PETROLEUM
. BURN CAUSED BY STEAM
. POINTS ON MACHINE THAT PINCH (2 WORDS)
11. SOUND
12. MATERIALS USED IN DYEING
13. MOISTURE FORMED ON OUTSIDE OF SURFACE
15. INJURY CAUSED BY EXCESSIVE HEAT
16. A THICK LUBRICANT
17. MUSCLE PAIN
19. COLORS
21. THE ACT OF BEING CAREFUL
22. SOURCE OF DANGER

DOWN

1. BIG TUB (4 WORDS)
3. FORM USED TO CUT POWER (4 WORI
4. EYE PROTECTION
6. ACID
7. WHERE WATER AND DYE MIX TOGETH (2 WORDS)
8. EXTRACTS WASTE WATER (2 WORDS)
9. INJURY
10. CONTROL PANEL
14. A LIQUID YOU CAN DRINK
15. CARTS
18. SAFEY ACTION
20. PROTECTION FROM DANGER

SAFETY WORD SEARCH PUZZLE

DIRECTIONS: Find and circle the words listed below in the puzzle.

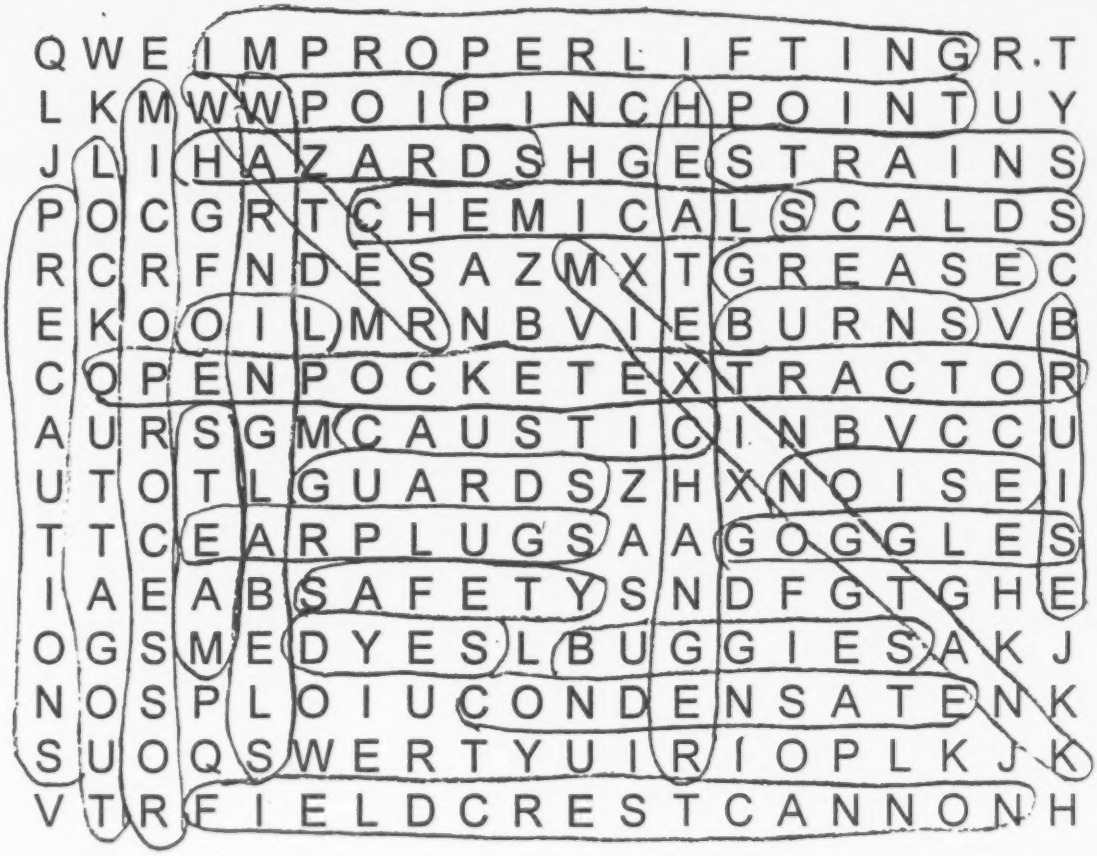
Q W E I M P R O P E R L I F T I N G R T
L K M W W P O I P I N C H P O I N T U Y
J L I H A Z A R D S H G E S T R A I N S
P O C G R T C H E M I C A L S C A L D S
R C R F N D E S A Z M X T G R E A S E C
E K O O I L M R N B V I E B U R N S V B
C O P E N P O C K E T E X T R A C T O R
A U R S G M C A U S T I C I N B V C C U
U T O T L G U A R D S Z H X N O I S E I
T T C E A R P L U G S A A G O G G L E S
I A E A B S A F E T Y S N D F G T G H E
O G S M E D Y E S L B U G G I E S A K J
N O S P L O I U C O N D E N S A T E N K
S U O Q S W E R T Y U I R T O P L K J K
V T R F I E L D C R E S T C A N N O N H

BRUISE
BUGGIES
BURNS
CAUSTIC
CHEMICALS
CONDENSATE
DYES
EAR PLUGS
FIELDCREST CANNON
GOGGLES
GREASE
GUARDS
HAZARDS
HEAT EXCHANGER
IMPROPER LIFTING
LOCK OUT TAG OUT
MICRO PROCESSOR
MIXING TANK
NOISE
OIL
OPEN POCKET DYE EXTRACT
PINCH POINT
PRECAUTIONS
SAFETY
SCALDS
STEAM
STRAINS
WARNING LABELS
WATER

Attachment H
Answer Key

SAFETY WORD SEARCH PUZZLE

DIRECTIONS: Find and circle the words listed below in the puzzle.


Q W E I M P R O P E R L I F T I N G R T
L K M W W P O I P I N C H P O I N T U Y
J L I H A Z A R D S H G E S T R A I N S
P O C G R T C H E M I C A L S C A L D S
R C R F N D E S A Z M X T G R E A S E C
E K O O I L M R N B V I E B U R N S V B
C O P E N P O C K E T E X T R A C T O R
A U R S G M C A U S T I C I N B V C C U
U T O T L G U A R D S Z H X N O I S E I
T T C E A R P L U G S A A G O G G L E S
I A E A B S A F E T Y S N D F G T G H E
O G S M E D Y E S L B U G G I E S A K J
N O S P L O I U C O N D E N S A T E N K
S U O Q S W E R T Y U I R I O P L K J K
V T R F I E L D C R E S T C A N N O N H

- BRUISE
- BUGGIES
- BURNS
- CAUSTIC
- CHEMICALS
- CONDENSATE
- DYES
- EAR PLUGS
- FIELDCREST CANNON
- GOGGLES
- GREASE
- GUARDS
- HAZARDS
- HEAT EXCHANGER
- IMPROPER LIFTING
- LOCK OUT TAG OUT
- MICRO PROCESSOR
- MIXING TANK
- NOISE
- OIL
- OPEN POCKET
- PINCH POINT
- PRECAUTIONS
- SAFETY
- SCALDS
- STEAM
- STRAINS
- WARNING LABELS
- WATER

EXTRACTOR

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SUPPLEMENTAL MATERIAL

HEAT STRESS

CONTROLLING HEAT STRESS

High temperatures put stress on our bodies. When the body's cooling system has to work too hard to reduce heat stress, it can strain itself. This physical strain - combined with other stresses such as work, loss of fluids or fatigue - may lead to heat disorders, disability, or even death. Your body always generates internal heat, but the amount of heat that stays stored in your body depends on your:

* Surroundings
* Level of physical activity
* Type of work
* Time spent working
* Recovery time between work periods

You owe it to yourself and your fellow workers to recognize the signs of heat stress and know the proper first aid measures. You can take precautions to prevent heat disorders by the following ways:

* Acclimatization
* Proper work procedures
* Food and water intake

Acclimatization:

If you can't control the temperature or humidity in your workplace, you must become acclimatized to it. Acclimatization is the ability to perform maximum amounts of strenuous work in the heat by gradually getting yourself accustomed to the climate you work in.

The first step is to get into good physical condition. Physical work in the heat is necessary for full acclimatization, but it should consist of increasingly longer work periods each day, alternating with rest or lighter work.

Some workers reach full acclimatization within a week, while others take longer. If you go on vacation, remember that you will start losing your resistance to heat after one week and you'll lose it completely in a month.

Three Major Heat Disorders

Heat Cramps - Painful cramps of the muscles used while working, such as the arms, legs or stomach.

Heat Exhaustion - Occurs when the body's heat control mechanism is overactive but hasn't broken down completely.

Heat Stroke - Requires immediate attention. Happens when the body depletes its salt and water supplies, sweating stops and heat loss by evaporation of sweat is blocked.

Work Procedures:

Another important method for reducing the ill effects of heat stress is to follow scheduled work/rest cycles that keep any individual from overdoing it. Workers make alternate light and heavy work indoor and outdoor work, etc. Duties may also be rotated among several workers to protect them from heat, and workload can be adjusted based on body size or physical strength.

Food and Water Intake:

Most people don't realize that hot foods add directly to body heat. Heavy meals reduce your ability to get rid of heat because they redirect blood flow to your digestive track instead of your skin surface. Be sure your noon meal is light and cool, then try to rest for a while right after eating. Plan on eating your heaviest meal of the day after the workday is over.

The most important step you can take is to replenish water can salt used up by your body's cooling mechanisms. Fluid intake should equal fluid loss throughout the day. Be sure you have enough cool drinking water at your job site and drink 5 to 7 ounces of water every 15 to 20 minutes, even if you don't feel thirsty.

Consuming drinks designed to replace blood fluid and electrolytes is okay, but NEVER drink alcoholic beverages, since alcohol dehydrates the body.

Except when treating heat disorders, salt supplements are not recommended, since too much salt can cause higher body temperature, increased thirst and nausea. The normal diet usually has enough salt in it, but if you sweat continuously or repeatedly, you may use extra salt at the table. Salt tables are considered harmful because the salt doesn't enter your system as fast as water or other fluids.

In addition to the medical hazards of bodily illness or injury caused by heat stress, there is also a higher frequency of accidents in hot environments.

Heat disorders are preventable with proper planning, supervision and training. Steps you can take to cope with the hazards of heat stress include:

* Understanding the effects of heat stress
* Knowing the symptoms and treatment for heat stress disorders
* Taking personal precautions against heat disorders.

Four ways for the body to gain or loose heat:

Radiation - transfers heat to or from surrounding objects that are not in direct contact with the body.

Convection - transfers body heat to or from air moving over the skin.

Conduction - direct contact with objects that are colder or warmer than the body.

Evaporation - causes cooling with air absorbs body moisture from the lungs or skin.

Factors Affecting Heat Stress:

Some of the factors affecting heat stress are things you can control - such as the amount of salt you eat. Physical conditions that can hurt your body's natural ability to withstand high temperatures include:

Dehydration (water loss)

Diarrhea

Exposure to high temperatures

Fatigue

Improper work procedures

Lack of acclimatization

Loss of sleep

Medications

LAUNDRY WORKSHEET

1. Name three symptoms of heat exhaustion? _____

_____

_____

2. What causes a heat stroke? _____

_____

_____

3. Define the word acclimatization. _____

_____

_____

4. List the four ways your body loses heat? _____

_____

_____

5. List three major heat disorders. _____

_____

_____

Answer Key

LAUNDRY WORKSHEET

1. Name three symptoms of heat exhaustion? Heavy sweating, intense thirst, weak and rapid pulse, low blood pressure

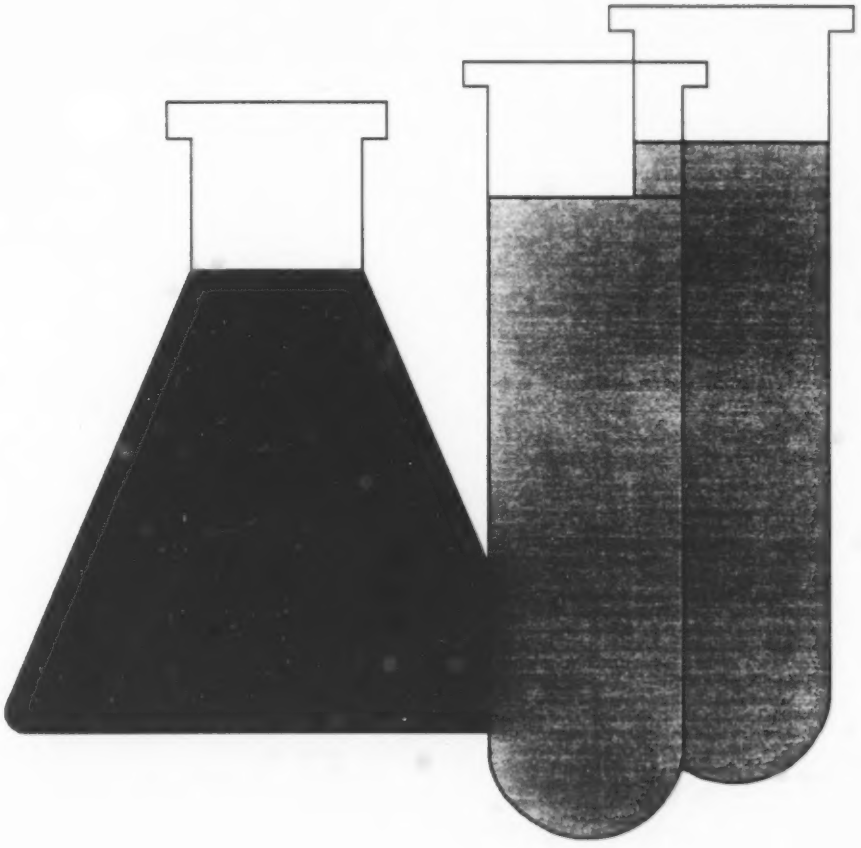
2. What causes a heat stroke? When the body depletes its salt and water supplies and sweating stops and heat loss by evaporation of sweat is blocked

3. Define the word acclimatization. The ability to perform maximum amount of strenuous work in the heat

4. List the four ways your body loses heat? Radiation, Convection, Conduction, Evaporation

5. List three major heat disorders. Cramps, exhaustion and stroke

Chemical Safety



Module: Chemical Safety **Overall Time 50 min**

Job Title: Dye Tub Operators

Specific Instructional Objective	Learning Activities	Time	Resources/ Materials	Evaluation Process
Students will be able to identify and interpret correct procedures for health and safety precautions while handling chemicals.	**Motivational Activity:** Demonstrate an experiment using different substances to show outcomes of mixtures.	10 min	jars, baking soda, vinegar, salt, etc.	Observation
	Vocabulary: Students will work together defining words. Students will work matching activity.	10-15 min	Attachment A Overhead Projector Attachment B	Participation
	Instructional Activities: Instructor displays a transparency of a MSDS for class review.	30 min	Attachment C	Participation
	Instructor reviews reading material with students. Open discussion.		Attachment D	Participation
	Students will complete true/false questions relating to chemicals.		Attachment E	Instructor checks for understanding
	Students complete worksheets that relate to data concerning MSDS.		Attachment F	Instructor checks for accuracy
	Evaluation - Students complete Attachment G.		Attachment G	Instructor checks for completion.

Module: Chemical Safety
Job Title: Dye Tub Operators

Specific Instructional Objective	Learning Activities	Time	Resources/ Materials	Evaluation Process
	Distribute Attachment F. Students will independently work safety worksheets.		Attachment F	Instructor will grade for accuracy.

Job Title: Dye Tub Operator

Module: Chemical Safety

General Instructional Objective: Identify and interpret correct procedures for health and safety precautions while handling chemicals.

Specific Instructional Objective: Students will be able to handle chemicals at the work place in a safe manner.

Motivational Activity:

Instructor will demonstrate an experiment using different substances to show different methods and their results. Instructor will use substances such as baking soda, vinegar, salt, etc.

Vocabulary:

Display vocabulary words (Attachment A) on overhead. Ask students to work with a partner to define two vocabulary words. Distribute handout (Attachment B) work together orally while doing matching activity.

Instructional Activities::

Explain to students that you are going to review the purpose /usage of a Materials Safety Data Sheet. Ask students if they know how to read and identify the information on a MSDS? Ask students to explain what a MSDS means to a dye tub operator. Give definition of a MSDS. Explain that a MSDS gives you detailed information on a chemical and its hazards. Display a MSDS on a transparency (Attachment C). Describe the purpose of the different sections on the MSDS. (I). Product identification (II). Hazard Warning Label (III). Hazardous Ingredients (IV) Physical Data (V). Fire and Explosion Data and etc. Discuss the products, the hazardous ingredients, physical data, fire and explosion data, health hazards, spill and leakage procedures, and the safe handling and use of chemicals that is shown on the MSDS.

Divide students into small groups. Distribute reading material concerning Chemical Safety (Attachment D). Students will review material and discuss situations where they have dealt with chemicals at work. Remind students that chemicals are important in the production of many items that help make our lives better and more enjoyable. However, some chemicals can pose serious hazards to your health if used carelessly.

The teacher will lead an open discussion concerning steps an employee should take if an accident occurred while working with chemicals. (Examples below)

What should you do if you were to get dye on your skin or in your eyes?

What should you do if you were to inhale dye dust?

What should you do if you were to accidentally get dye in your mouth?

Accept any reasonable safety procedures that they describe in their discussion. Review locations of eye wash stations and showers in the plant in case of chemical exposure.

Students will complete the practice exercises independently (Attachment E). The teacher will circulate around the room to assist learners if necessary. If time permits distribute crossword puzzle for reinforcement in vocabulary.

Evaluation:

Students will complete the teacher made activity (Attachment F) using the MSDS (Attachment C) that is provided for information. If time allows students will complete the word bank puzzle search (Attachment G).

Dyes	Physical data	Skin Absorption
Inhalation	Identify	Combustible
Physical data	Soda Ash	Odornix
Ammonium Sulfate	Hipochem Migrator J	Vircon ACP
Mesitol	Cinifix	Intrawhite CF
Toxic	Dermal	Salt
Oxidizing Agent	Flammable	Reactivity

Dyes	Chemicals that are used to add color to many things, including cloth, paper, leather, plastics, inks and automotive products.
Combustible	A liquid or other substance that burns when heated above 100% Fahrenheit.
Skin Absorption	Passing through the skin into the bloodstream.
Inhalation	Breathing of substances
Toxic	Poisonous to the body
Reactivity	The stability of the chemical. The incompatibility of this chemical with others you might think of mixing it with.
Irritant	A substance that will cause irritation and discomfort to the eyes, skin or respiratory system.
Flammable	A liquid with a flash point below 37.8 degrees Celsius or solids that will ignite readily or are liable to cause fires under ordinary conditions through friction or retained heat.
Dermal	Refers to the skin.

Oxidizing Agent	A substance that causes an oxidation reaction. Examples - bleach, peroxides and chlorates.
Physical data	The boiling point, melting point, solubility, appearance and odor.
Identity	The name of the chemical, the manufacturer.
Salt	Used on cotton - reacts with dye to make the cotton take the color.
Soda Ash	Drops the pH of the water bath; also used as a cleaning agent or to strip color from fiber.
Ammonium Sulfate	Chemical that breaks down into an acid slowly as the temperature of the bath rises - causes the dye to go on slower used on cotton, nylon and polyester.
Hipochem Migrator J	Leveler and migrator - causes the dye to go on and off the fiber and color is more level. Keep away from open flame or strong oxidants.
Vircon ACP	Cotton Leveler
Odornix	Deodorizer
Arrocon 458	Acid - when added to the bath will cause the dye to go on faster. Phosphoric Acid - Avoid contact with Alkalis, Oxidants and Sulfides

Attachment B

Chemical Vocabulary
Matching Activity

* Directions - Match the words in Column A with the word meanings in Column B by writing the correct letter from Column B in the space provided in Column A

Column A	**Column B**
1_____Toxic	(a) Associates wear to protect eyes.
2._____Dermal	(b) A liquid or other substance that burns when heated above 100% Fahrenheit.
3._____Arrocon 458	(c) Poisonous to the body.
4._____Idenity	(d) The chance, risk, or obstacle of becoming injured
5._____Dyes	(e) Drops the pH of the water bath, also used as a cleaning agent and to strip color from fiber.
6._____Soda Ash	(f) Acid-when added to the bath will cause the dye to go on faster.
7._____Goggles	(g) To breath in.
8._____Hazard	(h) Chemicals that are used to add color to many things, including cloth, paper, leather, plastics, links and automotive products.
9._____Inhalation	(I) The name of the chemical, the manufacturer.
10.____Combustible	(j) Refers to the skin.

Attachment B
Answer Key

Chemical Vocabulary
Matching Activity

*Directions - Match the words in Column A with the word meanings in Column B by writing the correct letter from Column B in the space provided in Column A

Column A	**Column B**
1. C Toxic	(a) Associates wear to protect eyes.
2. J Dermal	(b) A liquid or other substance that burns when heated above 100% Fahrenheit.
3. F Arrocon 458	(c) Poisonous to the body.
4. I Idenity	(d) The chance, risk, or obstacle of becoming injured
5. H Dyes	(e) Drops the pH of the water bath, also used as a cleaning agent and to strip color from fiber.
6. E Soda Ash	(f) Acid-when added to the bath will cause the dye to go on faster.
7. A Goggles	(g) To breath in.
8. D Hazard	(h) Chemicals that are used to add color to many things, including cloth, paper, leather, plastics, links and automotive products.
9. G Inhalation	(I) The name of the chemical, the manufacturer.
10. B Combustible	(j) Refers to the skin.

MATERIAL SAFETY DATA SHEET

A[illegible] Engineering, Inc.
P[illegible] Box 1795
[illegible] South Hwy 41
[illegible]alton, GA 30722

Phone:
INQUIRY - (706)226-5054
EMERGENCY - (800)424-9300

ATTACHMENT C

HAZARD RATINGS		
HEALTH	: 2	0=Least 1=Slight
FLAMMABILITY	: 0	2=Moderate 3=High
REACTIVITY	: 0	4=Extreme
PERSONAL PROTECTION: X		

Product Name: ARROCON 458

SECTION I

Manufacturers Name: Arrow Engineering, Inc.
Address : P.O. Box 1795, 1711 South Hwy 41, Dalton, GA 30722
Chemical Name : Not Applicable
Generic Family: Phosphate
Formula ID Num: 458 - Proprietary
Date Prepared/Updated: 06/03/94
Name Of Preparer : Philip G. Carlson

SECTION II - HAZARDOUS INGREDIENTS/INFORMATION

HAZARDOUS COMPONENTS		OSHA PEL	ACGIH TLV	OTHER SKIN LD50	% MAX
CAS NO.	CHEMICAL NAME				
7664-38-2	Phosphoric Acid	1 mg/m3	1 mg/m3		50

Refer to Sections VIII and IX

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

Specific Gravity (H2O = 1)	: 1.30	Boiling Point	: 212 Deg. F
Vapor Pressure (mm Hg)	: ND	Melting Point	: ND Deg. F
Vapor Density (Air=1)	: ND	Evaporation Rate (Butyl Acetate=1)	: ND
Percent Volatile (by Volume)	: 56		
Solubility in Water	: Complete		

Appearance: Clear colorless liquid Odor: Mild

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flash Point/Method Used: >212 / TCC Flammable Limits: N/A - N/A
Extinguishing Media: Use water spray, dry chemical, foam, or carbon dioxide.
Special Fire Fighting Procedures: Cool exposed containers with water.
Unusual Fire and Explosion Hazards: Fire fighters should wear self contained breathing apparatus in positive-pressure mode with a full face piece when there is a possibility of hazardous decomposition of products.

SECTION V - REACTIVITY DATA

Stability: Stable
Incompatibility (Materials to Avoid): Alkalis, oxidizing or reducing materials, cyanides, sulfides or combustible materials. Contact with reactive metals (e.g. mild steel & aluminum) may produce flammable/explosive hydrogen air mixtures.
Hazardous Decomposition or Byproducts: At flame temperatures may liberate toxic phosphorus oxides.
Hazardous Polymerization: Will Not Occur

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SECTION VI - HEALTH HAZARD DATA

:(s) of Entry:
Inhalation? : Moderate
Skin? : Moderate
Ingestion? : Moderate
Eyes? : High

Health Hazards (Acute and Chronic): Bronchitis, pulmonary edema, and chem: pneumonitis may occur. Brief Exposure may cause irritation, coughing, chest pain or breathing difficulty. Prolonged exposure may cause severe irritation or tissue damage.

Carcinogenicity:
NTP? : No
IARC Monographs? : No
OSHA Regulated? : No

Signs and Symptoms of Exposure:
Inhalation : Vapors & mists are extremely corrosive to the nose, throat and mucous membranes.
Skin Contact : Vapors, mists and liquid are corrisive to the skin. Liquid and mist may burn the skin.
Ingestion : Causes sever abdominal pain, nausea, vomiting, and collap:
Eye Contact : Contact with vapors or mist will be severely irritating.

edical Conditions Generally Aggravated by Exposure: Persons with pre-existing skin disorders, eye problems, or impaired liver, kidney or respiratory function may be more susceptible to effects of the product.

mergency and First Aid Procedures:
Inhalation : Remove to fresh air. If breathing is difficult, administer oxygen.
Skin Contact : Wash exposed area with soap and water.
Ingestion : DO NOT induce vomiting, dilute by drinking water. If vomiting occurs, administer more water.
Eye Contact : Flush eyes with water, seek medical attention if eye irritation continues.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

ps to Be Taken in Case Material is Released or Spilled:
Small Spills: Soak up spills with absorbant medium and transfer into suitable containers.
Large Spills: Dike spills with earth or other absorbent material and carefully neutralize with soda ash or lime. If soda ash is used, ventilate to dissipate carbon dioxide gas. Notify appropriate governmental authorities if spill enters sewer or regulated waters.

ste Disposal Method: All recovered material should be packaged, labeled, transported, and disposed or reclaimed in conformance with applicable laws & regulations.

ecautions to Be Taken in Handling and Storing: Store in cool, dry place, and tightly closed. Vent container carefully, as needed, to relieve pressure.

her Precautions: Empty containers will retain residue & vapor - Always obey hazard warnings and handle empty containers as if they were full.

SECTION VIII - CONTROL MEASURES

spiratory Protection : NIOSH approved cannister for emergencies.
ntilation: Yes Local Exhaust: Yes Forced Exhaust: No
otective Gloves: Rubber Gloves.
Protection: Full face shield or goggles.
er Protective Clothing or Equipment: Acid resistant slicker suit with rubber apron, rubber boots with pants outside.
k/Hygienic Practices: Wash thoroughly after handling. DO NOT get in eyes, on skin, or on clothing. Do not cut, grind, weld or drill on or near container.

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SECTION IX - REGULATORY INFORMATION & REFERENCES

SARA TITLE III REPORTING REQUIREMENTS

TION 304 Reporting required if above 10000 pounds
CTION 311 Reporting required if above threshold level
ECTION 312 Reporting required if above threshold level
ECTION 313 Reporting required: Yes

ERCLA Reporting required if above 10000 pounds

CRA Reporting required: No

OTHER

iodegradability: Unknown

hipping Name: Corrosive liquid, n.o.s.

.O.T. Hazard Name: Corrosive liquid, n.o.s.

.O.T. ID Number: UN 1760

.O.T. Hazard Class: Corrosive material CLASS 8 PG I

REFERENCES

oxic Chemical Release Inventory Reporting Package for 1993, EPA 740-K-94/001.
hemical Guide to the OSHA Hazard Communication Standard, Roytech Publicatuions, Inc. 1991
epartment of Transportation Hazardous Materials Table, 49 CFR 172.101.

o the best of our knowledge, the information presented is accurate and complete.

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HAZARDOUS CHEMICALS READING MATERIAL

Warning Labels and Material Safety Data Sheets

Container warning labels name the chemicals and list their hazards.

The material safety data sheet, or MSDS, gives specific information on the chemical's hazards and how to control them.

Read the label on each chemical you use.

Consult the MSDS whenever you need detailed safety information.

Assume that any unknown chemical by product is hazardous, and follow your company's Chemical Hygiene Plan.

Dyes are chemicals that are used to add color to many things, including cloth, paper, leather, plastics, inks and automotive products. They are an important part of our everyday life.

Dye comes in many forms. They are powders, liquids, pastes, granules, pellets, tablets and other forms. However, all dyes have one thing in common. They are a potential source of exposure to the worker who handles them.

Dyes are not all good or all bad. Some dyes pose a significant risk to health while others pose no risk. The Product Label can identify any potential hazards and recommendations for safe handling. You may also read the Material Safety Data Sheet for more complete information and recommendations for protective procedures. .All dyes can be used safely as long as exposures are adequately controlled. Work practices are probably one of the biggest single factors in the control of your exposure when handling dyes. One way to avoid direct skin contact with dyes is to wear gloves, aprons or other protective clothing when contact with dye is likely. Wash hands regularly during the workday and immediately whenever skin contact occurs. If you have any questions about special hazards or precautions required for any dyes you handle, be sure to ask your supervisor to explain.

Dyes, like other chemical substances, vary greatly in their toxicity according to their chemical structure. Although most commercial dyes in use today have very low toxicity, there are some dyes that are toxic and may cause adverse health effects if exposure levels are high enough. Many dyes have not received extensive health-effects testing and exposure limit recommendations are not available for most dyes. It is very important to minimize dye exposure at all times.

* Skin contact is the most common way to be exposed to dyes. Usually when a dye just colors your skin, it is not affecting your health. You should wash your hands regularly during the workday to minimize absorption of dye through the skin.

*You can also be exposed to dyes by breathing (inhaling) them. Some dyes may irritate your respiratory system. Some dyes can affect your health if they are absorbed into your body through your lungs.

*Some reactive dyes may cause allergic respiratory reactions. These reactions are often sudden and can be very serious. Sometimes these reactions do not occur until exposure has occurred several times.

*You can also be exposed to dyes by swallowing (ingesting) them. Swallowed dyes can affect your health if they are absorbed into your body through your stomach or intestines. Once in your body, dyes can be transformed by metabolism into a substance that is harmless and readily eliminated, or, in some cases, dyes can be metabolized into a more toxic substance. Certain dyes, if ingested, can be transformed in the body into potential carcinogens, or cancer-causing agents.

*Other health problems can also be caused by exposure to some dyes. There are many adverse health effects which can be associated with one substance but not another within the same family of chemicals. Always avoid eating, drinking, and smoking around dyes.

*Always read the MSDS and labels for the dyes you handle and ask your supervisor if you have any questions or concerns.

FOUR WAYS TO AVOID ACCIDENTAL EXPOSURE TO HAZARDOUS CHEMICALS

Practice Safe Work Habits - Obey all safety rules - never take shortcuts when handling, using, storing, or transporting hazardous chemicals.

Be informed - Hazard communication is for your protection. Make the most of it. Know how to use the available information on chemical hazards.

Use Personal Protective Equipment - Make sure you use the right protective clothing and equipment and that it fits properly. Follow approved practices for cleaning and storing, and report any damaged equipment.

Know Emergency Procedures - Learn how to use first-aid supplies, eyewash.

THREE WAYS YOU CAN BE EXPOSED TO CHEMICALS

Swallowed - especially if you eat or smoke around chemicals.

Absorbed - through the skin or splashed into the eyes.

Inhaled - in the form of dust, gas or vapors.

Directions: Circle the correct answer.

1. If you are behind schedule, it's OK to take shortcuts with hazardous chemicals to get the job done. True False

2. Chemical manufacture`s and importers are required to provide information about chemical hazards. True False

3. Only supervisors need to read container labels. True False

4. A "signal word" on a container label tells you the degree of hazard. True False

5. The MSDS includes information on what to do if the chemical leaks or spills. True False

6. Portable containers of hazardous chemicals do not need to be labeled if they are intended for immediate use. True False

7. "MSDS" stands for "Material Specifications Data Sheet." True False

8. A "permissible exposure limit" is the amount of time you can safely be exposed to a chemical. True False

9. Hazard communication programs include training on how to handle hazardous chemicals safely. True False

10. The "reactivity data" section on a MSDS tells whether the chemical is radioactive. True False

Attachment E
Answer Key

Directions: Circle the correct answer.

1. If you are behind schedule, it's OK to take shortcuts with hazardous chemicals to get the job done. True **False**

2. Chemical manufacture's and importers are required to provide information about chemical hazards. **True** False

3. Only supervisors need to read container labels. True **False**

4. A "signal word" on a container label tells you the degree of hazard. **True** False

5. The MSDS includes information on what to do if the chemical leaks or spills. **True** False

6. Portable containers of hazardous chemicals do not need to be labeled if they are intended for immediate use. True **False**

7. "MSDS" stands for "Material Specifications Data Sheet." True **False**

8. A "permissible exposure limit" is the amount of time you can safely be exposed to a chemical. **True** False

9. Hazard communication programs include training on how to handle hazardous chemicals safely. **True** False

10. The "reactivity data" section on a MSDS tells whether the chemical is radioactive. **True** False

Directions: Using the MSDS that is provided answer the following questions relating to Arrocon 458.

1. What are the signs of acute exposure by inhalation to Arrocon 458?

2. Is Arrocon 458 classified as a carcinogen by OSHA?

3. In case of fire should water be used to extinguish the flames?

4. What personal protective equipment is recommended when handling Arrocon 458.

5. What is the first aid treatment recommended if Arrocon 458 gets in your eyes?

Directions: Using the MSDS that is provided answer the following questions relating to Arrocon 458.

1. What are the signs of acute exposure by inhalation to Arrocon 458?

   May cause irritation, coughing, chest pain or breathing difficulty.

2. Is Arrocon 458 classified as a carcinogen by OSHA?

   No

3. In case of fire what measures should you take to extinguish the flame?

   Use water spray, dry chemical, foram, or carbon dioxide

4. What personal protective equipment is recommended when handling Arrocon 458?

   Gloves, goggles or shield, rubber apron, and rubber boots

5. What is the first aid treatment recommended if Arrocon 458 gets in your eyes?

   Flush eyes with water.

MATERIAL SAFETY DATA SHEET

00654

AMMONIUM SULFATE

Laundry

Users of this product should study this data sheet containing important safety information and should make it available to all employees, agents and contractors. If the product is resold, copies of this data sheet should be provided to the purchaser for use with its employees, agents and contractors.

SECTION I: IDENTIFICATION OF PRODUCT

MANUFACTURER'S NAME: DSM Chemicals North America, Inc.

MANUFACTURER'S ADDRESS: No. 1 COLUMBIA NITROGEN ROAD
P.O. BOX 2451 - AUGUSTA, GEORGIA 30903

MANUFACTURER'S PHONE NO.: (404) 823-4240 **FAX NO:** (404) 823-4299

TRANSPORTATION EMERGENCIES, CALL: CHEMTREC, (800) 424-9300

PRODUCT NAME: Ammonium Sulfate

CHEMICAL FORMULA: $(NH_4)_2SO_4$

SYNONYMS: Diammonium Sulfate
Standard or Granular Ammonium Sulfate

CHEMICAL FAMILY: Inorganic Ammonium Sulfate

CAS NUMBER: 7783-20-2

COMPOSITION: 98.5% - 100% pure by weight

SECTION II: PHYSICAL DATA

BOILING POINT (Deg C): Decomposes at 235

SPECIFIC GRAVITY (Water = 1): 1.77

VAPOR PRESSURE (mm Hg): NA

VAPOR DENSITY (Air = 1): NA

SOLUBILITY IN WATER: 77 g/100g @ 20 degrees C

APPEARANCE AND ODOR: Brownish-gray to white crystals or granules; odorless

MOLECULAR WEIGHT: 132.16

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CHEMICAL WORD SEARCH

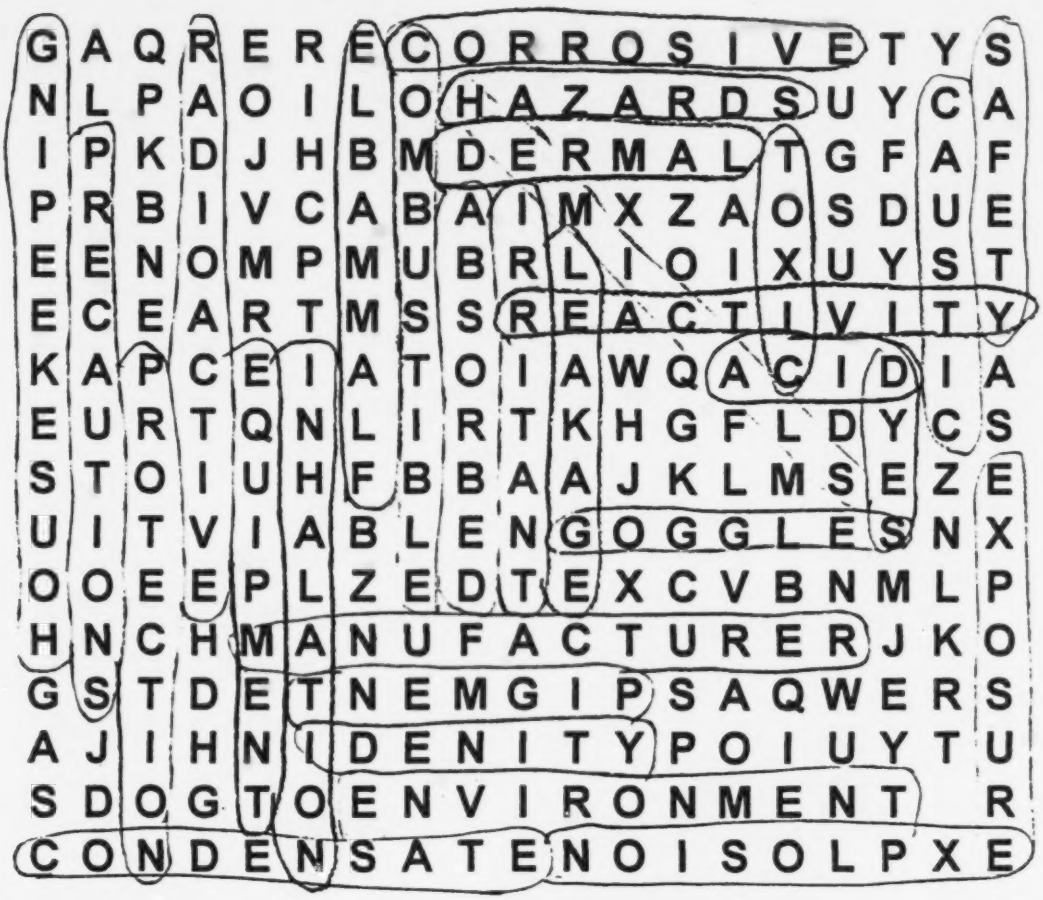
DIRECTIONS: FIND AND CIRCLE THE WORDS LISTED BELOW IN THE PUZZLE.

G A Q R E R E C O R R O S I V E T Y S
N L P A O I L O H A Z A R D S U Y C A
I P K D J H B M D E R M A L T G F A F
P R B I V C A B A I M X Z A O S D U E
E E N O M P M U B R L I O I X U Y S T
E C E A R T M S S R E A C T I V I T Y
K A P C E I A T O I A W Q A C I D I A
E U R T Q N L I R T K H G F L D Y C S
S T O I U H F B B A A J K L M S E Z E
U I T V I A B L E N G O G G L E S N X
O O E E P L Z E D T E X C V B N M L P
H N C H M A N U F A C T U R E R J K O
G S T D E T N E M G I P S A Q W E R S
A J I H N I D E N I T Y P O I U Y T U
S D O G T O E N V I R O N M E N T R
C O N D E N S A T E N O I S O L P X E

ABORBED
ACID
CAUSTIC
CHEMICALS
COMBUSTIBLE
CONDENSATE
CORROSIVE
DERMAL
DYES
ENVIRONMENT
EQUIPMENT
EXPLOSION
EXPOSURE
FLAMMABLE
GOGGLES
HAZARDOUS
HOUSEKEEPING
IDENITY
INHALATION
IRRITANT
LEAKAGE
MANUFACTURER
PIGMENT
PRECAUTIONS
PROTECTION
RADIOACTIVE
REACTIVITY
SAFETY
TOXIC

CHEMICAL WORD SEARCH

DIRECTIONS: FIND AND CIRCLE THE WORDS LISTED BELOW IN THE PUZZLE.


G A Q R E R E C O R R O S I V E T Y S
N L P A O I L O H A Z A R D S U Y C A
I P K D J H B M D E R M A L T G F A F
P R B I V C A B A I M X Z A O S D U E
E E N O M P M U B R L I O I X U Y S T
E C E A R T M S S R E A C T I V I T Y
K A P C E I A T O I A W Q A C I D I A
E U R T Q N L I R T K H G F L D Y C S
S T O I U H F B B A A J K L M S E Z E
U I T V I A B L E N G O G G L E S N X
O O E E P L Z E D T E X C V B N M L P
H N C H M A N U F A C T U R E R J K O
G S T D E T N E M G I P S A Q W E R S
A J I H N I D E N I T Y P O I U Y T U
S D O G T O E N V I R O N M E N T R
C O N D E N S A T E N O I S O L P X E

ABSORBED
ACID
CAUSTIC
CHEMICALS
COMBUSTIBLE
CONDENSATE
CORROSIVE
DERMAL
DYES
ENVIRONMENT
EQUIPMENT
EXPLOSION
EXPOSURE
FLAMMABLE
GOGGLES
HAZARDS
HOUSEKEEPING
IDENITY
INHALATION
IRRITANT
LEAKAGE
MANUFACTURER
PIGMENT
PRECAUTIONS
PROTECTION
RADIOACTIVE
REACTIVITY
SAFETY
TOXIC

SUPPLEMENTAL MATERIAL

e the word beside the definition. Unscramble the circled letters and answer the question at e bottom of the page.

_ _ O O	Chemicals that are used to add color
_ _ O _ _ _ _ O _ O	Breathing of substances
O O _ O _	Poisonous to the body
O _ O _ _ O _ _	A substance that will cause irritation
O _ _ O _ _ _ _ O	A liquid that will ignite readily
O _ O _ _ O _ _ _ O _	A substance that burns
_ _ _ O O _ _ _ _ O	The stability of chemical
_ _ _ _ O _ _	Drops the pH of the water bath
_ O _ O	Reacts with dye to make cotton take color
O _ _ _ _ _ _ _ _ _ _	A way of being careful

E: What we are studying in this lesson?

_ _ _ _ _ _ _ _ _ _

Write the word beside the definition. Unscramble the circled letters and answer the question at bottom of the page.

_ _ O(1) O(2)	Chemicals that are used to add color
_ _ O(3) _ _ _ _ O(4) _ O(5)	Breathing of substances
O(6) O(7) _ O(8) _	Poisonous to the body
O(9) _ O(10) _ _ O(11) _ _	A substance that will cause irritation
O(12) _ _ O(13) _ _ _ _ O(14)	A liquid that will ignite readily
_ _ O(15) _ O(16) _ _ O(17) _ _ _ O(18) _	A substance that burns
_ _ _ O(19) O(20) _ _ _ _ O(21)	The stability of chemical
_ _ _ _ O(22) _ _	Raises the pH of the water bath
_ O(23) _ O(24)	Reacts with dye to make cotton take color
O(25) _ _ _ _ _ _ _ _ _ _	A way of being careful

CLUE: What we are studying in this lesson?

_ _ _ _ _ _ _ _ _ _

Attachmen
Answer Ke

Write the word beside the definition. Unscramble the circled letters and answer the question at bottom of the page.

D Y (E) (S) 1 2	Chemicals that are used to add color
I N (H) A L A T (I) O (N) 3 4 5	Breathing of substances
(T) (O) X (I) C 6 7 8	Poisonous to the body
(I) R (R) I T (A) N T 9 10 11	A substance that will cause irritation
(F) L A (M) M A B L (E) 12 13 14	A liquid that will ignite readily
(C) O (M) B U (S) T I B (L) E 15 16 17 18	A substance that burns
R E A (C) (T) I V I T (Y) 19 20 21	The stability of chemical
S O D A (A) S H 22	Raises the pH of the water bath
S (A) L (T) 23 24	Reacts with dye to make cotton take color
(P) R E C A U T I O N 25	A way of being careful

CLUE: What we are studying in this lesson?

C H E M I C A L S A F E T Y I S I M P O R T A N T .
15 3 1 13 4 19 23 18 2 22 12 14 20 21 9 17 8 16 25 7 10 24 11 5 6

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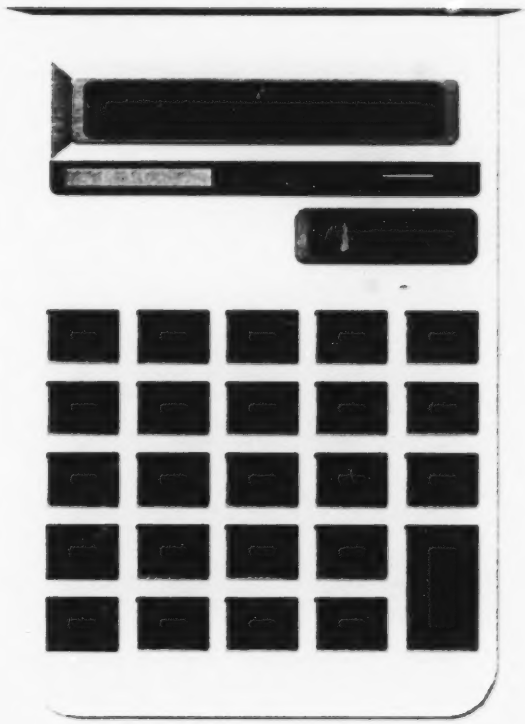
Calculator

+ − × ÷ %



Module: **Math - Calculator** **Overall Time 50 min**

Job Title: **Dye House Operators**

Specific Instructional Objective	Learning Activities	Time	Resources/ Materials	Evaluation Process
Perform basic calculations using a calculator with 100% accuracy.	**Motivational Activity**: Instructor will place an addition problem on the chalk board and demonstrate the ease of finding the answer with the calculator vs. using traditional pencil/paper method.	5 min	Chalk or dry erase board and chalk or markers	
	Teach Vocabulary: Use overhead transparency to introduce and discuss vocabulary words. Refer to words and definitions located in participant workbook.	5 min	Overhead projector Transparency (Attach. A)	
	Instructional Activities: Distribute calculator to each participant. Acquaint participants with calculator keys using overhead transparency (Attach. B). Provide instruction using the calculator on the following mathematical procedures: Addition, subtraction, multiplication, division, and finding part of a whole (percentage). Use worksheets provided for each procedure (Attachments C-L) in participant workbook.	20 min	Calculators Overhead projector Transparency (Attach. B) Attachments B,C,D,E,F,G, H,I,J,K,L Chalk board and chalk	Teacher observation of responses Teacher will check learners' work for understanding and accuracy

Module: **Math - Calculator**
Job Title: **Dye House Operators**

Specific Instructional Objective	Learning Activities	Time	Resources/ Materials	Evaluation Process
	Evaluation: Learners will complete worksheet (Attach. M in participant workbook) using the calculator to solve the problems.	15 min	Attach. M	Teacher will check work individually for understanding

Job Title: **Dye House Operators**

Module: **Math - Calculator**

General Instructional Objective: Understand use of basic calculator functions.

Specific Instructional Objective: Perform basic calculations with a calculator with 100% accuracy.

Motivational Activity: Place an addition problem (234 + 891 + 932 + 25 + 468 =) on the board and demonstrate the ease of finding the answer with the calculator vs. using traditional methods.

Vocabulary: Refer to vocabulary words in participant's workbook. (Attachment A) Use overhead transparency to introduce and discuss vocabulary words.

Instructional Activities: Refer learners to Attachment B in participants's workbook (Calculator Keys). Use overhead transparency to help students to identify the keys on calculator.

NOTE: ***In this lesson, instructor will provide instruction on several applications using the calculator. Before each new procedure, the instructor will show paper/pencil version of the procedure using the chalk board for demonstration of the procedure.***

Provide instruction on **addition** using the calculator (Attachment C). Teacher will ask learners to do the following: Press the numbers 5 and 6 and notice the display reads 56. Press + and notice the display reads 56. Press the number 4 two times and notice the display reads 44. Press = and notice the display now reads 100. Learners will continue practicing procedure by completing items 2-4 on Attachment C.

Learners will practice addition procedure by completing worksheet (Attachment D) in workbook independently.

Provide instruction on **subtraction** using the calculator (Attachment E). Teacher will use the same procedure described for Attachment C above.

Learners will practice procedure by completing worksheet (Attachment F) in workbook independently.

Provide instruction on **multiplication** using the calculator (Attachment G). (Use same procedure described for Attachment C.)

Learners will practice procedure by completing worksheet (Attachment H) in workbook independently.

Provide instruction on **division** using the calculator (Attachment I). (Use same procedure described for Attachment C.)

Learners will practice procedure by completing worksheet (Attachment J) in workbook independently.

Provide instruction on finding part of a whole (**percentage**) using the calculator (K). Instructor will demonstrate finding a percent of a whole number by use of the percent key and by use of the decimal. Learners will practice procedure by completing worksheet (Attachment L) in workbook.

Evaluation: Learners will complete worksheet (Attachment M) in workbook using a calculator to solve addition, subtraction, multiplication, and percentage problems. Teacher will check work individually for understanding and accuracy.

Vocabulary

Calculator	Electronic device for mathematical computations
Function Keys	Keys used for mathematical calculating
Solar-Powered Calculator	Contains a row of solar cells. These cells change light into electricity to power the calculator.
Battery-Operated Calculator	Contains a battery to power the calculator
Calculator Display	Displays the digits entered
Sum	Result of ***adding*** numbers
Product	Result of ***multiplication*** of two or more numbers
Quotient	Result of ***division*** of one number by another number
Dividend	Number ***to be divided***
Divisor	Number by which the ***dividend*** is ***divided***

Attachment A
Over head transparency

Vocabulary

Calculator

Function Keys

Solar-Powered Calculator

Battery-Operated Calculator

Calculator Display

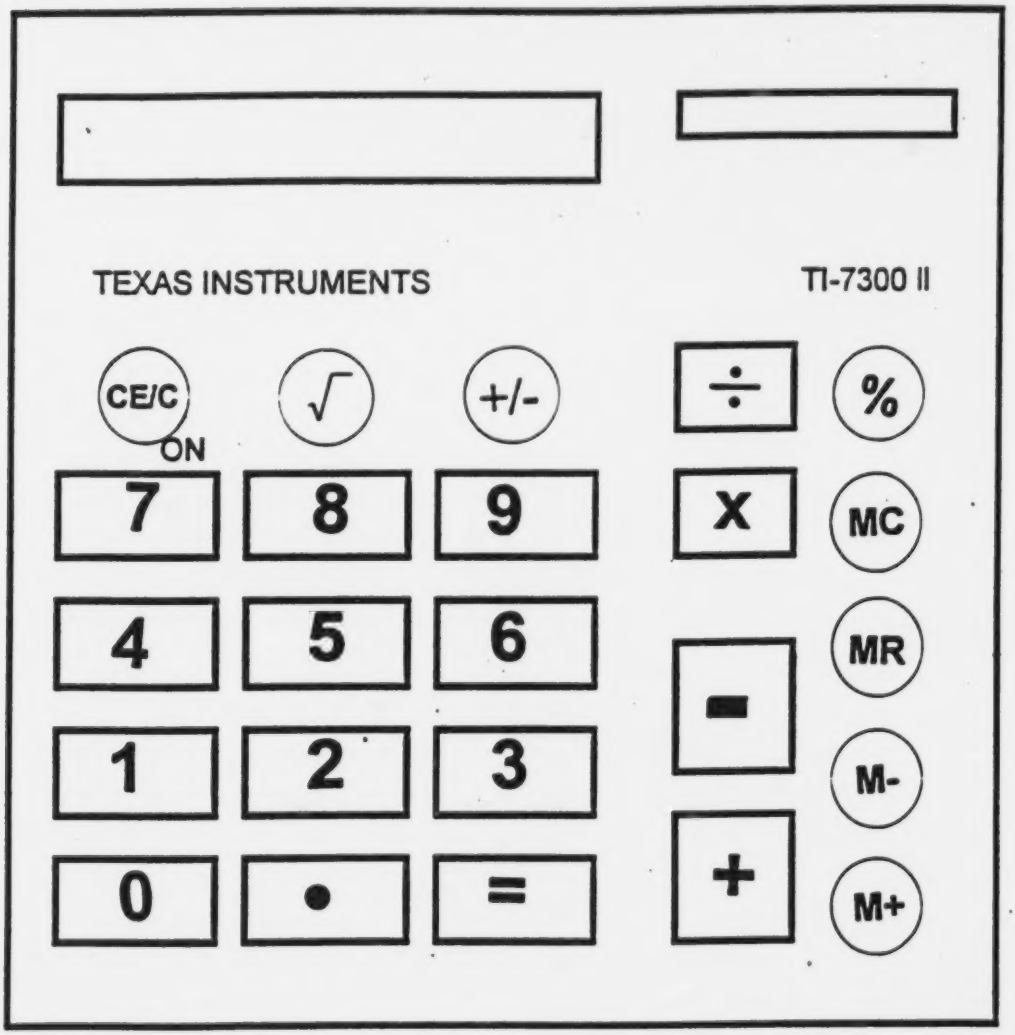
Sum

Product

Quotient

Dividend

Divisor


TEXAS INSTRUMENTS
TI-7300 II
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X
MC
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MR
1
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M-
0
•
=
+
M+

Addition With The Calculator

1. To add 56 + 44, press the keys as shown:

Press Keys	Display Reads
5 and 6	56.
+	56.
4 and 4	44.
=	100.

Answer: 100

2. To Add 26 + 41, press the keys as shown:

Press Keys	Display Reads
2 6	26.
+	26.
4 1	41.
=	67.

Answer: 67

3. To add 23 + 12 + 96, press keys as shown:

Press Keys	Display Reads
23	23.
+	23.
12	12.
+	35.
96	96.
=	131.

Answer: 131

4. To add 27 + 534 + 23, press keys as shown:

Press Keys	Display Reads
2 7	27.
+	27.
5 3 4	534.
+	561.
2 3	23.
=	584.

Answer: 584

Addition on the Calculator

Solve the following problems with the calculator:

1. 43 + 76 = _____

2. 1,756 + 4,356 = _____

3. 3.61 + 5.7 = _____

4. $.89 + $2.56 = _____

5. $3.78 + $9.49 = _____

6. $367.89 + $59.68 + $4.90 = _____

7. 9.32 + 5.09 + 8 + .46 = _____

8. If the records of a first shift operator show the following amounts of rugs were dyed on Monday:

Tub #1	1,185 pounds	Tub #3	1,250 pounds
Tub #2	950 pounds	Tub #4	1,150 pounds

How many pounds of rugs did this tub operator dye on Monday? _____

9. If redyes for the first week of April were as follows:

Monday	12 loads	Thursday	10 loads
Tuesday	15 loads	Friday	11 loads
Wednesday	8 loads		

How many loads were redyed the first week of April? _____

10. Ron tripped on a rubber mat in the laundry area. He injured his leg and was taken to the emergency room. He incurred the following expenses: $50.00 doctor fee; $130.00 for X-rays; $46.84 for medicine; and $50 to rent a set of crutches. How much was Ron's medical expenses? _____

Attachment D
Answer Sheet

Addition on the Calculator

Solve the following problems with the calculator:

1. 43 + 76 = 119

2. 1,756 + 4,356 = 6112

3. 3.61 + 5.7 = 9.31

4. $.89 + $2.56 = $3.45

5. $3.78 + $9.49 = $13.27

6. $367.89 + $59.68 + $4.90 = $432.47

7. 9.32 + 5.09 + 8 + .46 = 22.87

8. If the records of a first shift operator showed the following amounts of rugs were dyed on Monday:

Tub #1	1,185 pounds	Tub #3	1,250 pounds
Tub #2	950 pounds	Tub #4	1,150 pounds

How many pounds of rugs did this tub operator dye on Monday? 4,535

9. If redyes for the first week of April were as follows:

Monday	12 loads	Thursday	10 loads
Tuesday	15 loads	Friday	11 loads
Wednesday	8 loads		

How many loads were redyed the first week of April? 56 loads

10. Ron tripped on a rubber mat in the laundry area. He injured his leg and was taken to the emergency room. He incurred the following expenses: $50.00 doctor fee; $130.00 for X-rays; $46.84 for medicine; and $50 to rent a set of crutches. How much was Ron's medical expenses? $276.84

Subtraction On The Calculator

1. To subtract 36 from 98, press the keys as shown:

Press Keys	Display Reads
9 8	98.
−	98.
3 6	36.
=	62.

Answer: 62

2. To subtract 3.67 from 10.45, press the keys as shown:

Press Keys	Display Reads
1 0 . 4 5	10.45
−	10.45
3 . 6 7	3.67
=	6.78

Answer: 6.78

3. To complete the problem 35 + 8.3 -10.25, press the keys as shown:

Press Keys	Display Reads
3 5	35.
+	35.
8 . 3	8.3
−	43.3
10 . 25	10.25
=	33.05

Answer: 33.05

4. To complete the problem 8.6 + 2.3 + 8.9 – 4.1, press the keys as shown:

Press Keys	Display Reads
8 . 6	8.6
+	8.6
2 . 3	2.3
+	10.9
8 . 9	8.9
−	19.8
4 . 1	4.1
=	15.7

Answer: 15.7

Subtraction on the Calculator

Solve the following problems using the calculator.

1. 89 – 35 =

2. 1996 – 345 =

3. 1.357 – 1.11 =

4. 89.0 – 34.6 =

5. 11.2 + 6.9 – 2.7 – 7.2 =

6. 98.5 – 34.2 – 12.4 =

7. A rush order for cotton rugs must be completed as soon as possible. It requires 5,345 pounds of cotton rugs to be dyed. First shift completed part of the order. Dye tub operator number one completed loads totaling 1,345 pounds; operator number two completed 856 pounds; operator number three completed 398 pounds; and operator number four completed 1,298 pounds. What is the total pounds of cotton rugs completed by the first shift?

_____

In order for the second shift to complete the order, how many pounds of cotton rugs must the second shift complete? _____

Do you know how to check to see if your answer is correct?

8. A lock-out/tag-out was placed on machine #4 at 3:00 AM. The machine was repaired and restarted at 7:00 AM. How many hours was the machine out of operation? _____

9. Associates of one area of the plant raised $250 for the March of Dimes by selling chances on a rod and reel. Associates in another area of the plant had a bake sale and raised $135. How much more money was raised by the employees selling chances on the rod and reel? _____

What was the total raised by the associates of the two areas? _____

10. Program #25 requires 17.5 pounds of perborate for a load of rugs weighing 80-150 pounds. The same program requires 35 pounds of perborate for a load weighing 150-300 pounds. How much more perborate is required for the larger load?

_____

Subtraction on the Calculator

Solve the following problems using the calculator.

1. 89 – 35 = 54

2. 1996 – 345 = 1651

3. 1.357 – 1.11 = .247

4. 89.0 – 34.6 = 54.4

5. 11.2 + 6.9 – 2.7 – 7.2 = 8.2

6. 98.5 – 34.2 – 12.4 = 51.9

7. A rush order for cotton rugs must be completed as soon as possible. It requires 5,345 pounds of cotton rugs to be dyed. First shift completed part of the order. Dye tub operator number one completed loads totaling 1,345 pounds; operator number two completed 856 pounds; operator number three completed 398 pounds; and operator number four completed 1,298 pounds. What is the total pounds of cotton rugs completed by the first shift?

3,897

In order for the second shift to complete the order, how many pounds of cotton rugs must the second shift complete? 5,345 - 3,897 = 1,448

Do you know how to check to see if your answer is correct?

5,345 ✓
-3,897
+1,448 (Add)
5,345 ✓

8. A lock-out/tag-out was placed on machine #4 at 3:00 AM. The machine was repaired and restarted at 7:00 AM. How many hours was the machine out of operation? 7 - 4 = 3

9. Associates of one area of the plant raised $250 for the March of Dimes by selling chances on a rod and reel. Associates in another area of the plant had a bake sale and raised $135. How much more money was raised by the employees selling chances on the rod and reel?

$250 - $135 = $115

What was the total raised by the associates of the two areas?

$250 + $135 = $385

10. Program #25 requires 17.5 pounds of perborate for a load of rugs weighing 80-150 pounds. The same program requires 35 pounds of perborate for a load weighing 150-300 pounds. How much more perborate is required for the larger load? 35 - 17.5 = 17.5

Multiplication on the Calculator

1. To multiply 345 by 12 on the calculator, press the following keys:

Press Keys	Display Reads
3 4 5	345.
X	345.
1 2	12.
=	4140.

Answer: 4140

2. To multiply 26.13 X 7.1 on the calculator, press the following keys:

Press Keys	Display Reads
2 6 . 1 3	26.13
X	26.13
7 . 1	7.1
=	185.523

Answer: 185.523

3. To multiply 182.2 X 9.45 on the calculator, press the following keys:

Press Keys	Display Reads
1 8 2 . 2	182.2
X	182.2
9 . 4 5	9.45
=	1721.79

Answer: 1721.79

4. To multiply 1.2 X 2.4 X 6.8 on the calculator, press the following keys:

Press Keys	Display Reads
1 . 2	1.2
X	1.2
2 . 4	2.4
X	2.88
6 . 8	6.8
=	19.584

Answer: 19.584

Multiplying with the Calculator

Solve the following problems using the calculator:

1. 424 X 56 =

2. 89 X 2.25 =

3. 24 X 56 X 98 =

4. .78 X 3.6 X 1.9 =

5. .09 X .11 =

6. 23.54 X 9.30 =

7. .87 X 98.1 =

8. 34.61 X 4.15 =

9. $12.15 X 12 =

10. 789 X 123 =

Attachment H
Answer Sheet

Multiplying with the Calculator

Solve the following problems using the calculator:

1. 424 X 56 = 23,744

2. 89 X 2.25 = 200.25

3. 24 X 56 X 98 = 131,712

4. .78 X 3.6 X 1.9 = 5.3352

5. .09 X .11 = .0099

6. 23.54 X 9.30 = 218.922

7. .87 X 98.1 = 85.347

8. 34.61 X 4.15 = 143.6315

9. $12.15 X 12 = $145.80

10. 789 X 123 = 97,047

Division on the Calculator

NOTE: Review Vocabulary Words: Divisor, Quotient, and Dividend

To divide on your calculator, follow these steps:

Step 1:	Enter the Dividend
Step 2	Press ÷ Key
Step 3	Enter the divisor
Step 4	Press =

1. To divide 94 by 2 on your calculator, press the following keys:

Press Keys	**Display Reads**
9 4 (Dividend)	94.
÷	94.
2 (Divisor)	2.
=	47.

Answer: 47 (Quotient)

2. To divide 246 by 1.2 on your calculator, press the following keys:

Press Keys	**Display Reads**
2 4 6	246.
÷	246.
1 . 2	1.2
=	205.

Answer: 205

3. To divide 189.625 by 10.25 on your calculator, press the following keys:

Press Keys	**Display Reads**
1 8 9 . 6 2 5	189.625
÷	189.625
1 0 . 2 5	10.25
=	18.5

Answer: 18.5

Division on the Calculator

Solve the following division problems using the calculator:

1. 175 ÷ 25 =

2. 150.75 ÷ 4.5 =

3. 82.22 ÷ 1.1 =

4. 48.345 ÷ .123 =

5. 43210 ÷ 50 =

6. 987.234 ÷ .22 =

7. .00398 ÷ 1.2 =

8. 76.6 ÷ 3.3 =

9. 0.897 ÷ 2.3 =

10. 45.6 ÷ 4.56 =

Attachment J
Answer Sheet

Division on the Calculator

Solve the following division problems using the calculator:

1. 175 ÷ 25 = 7
2. 150.75 ÷ 4.5 = 33.5
3. 82.22 ÷ 1.1 = 74.745454
4. 48.345 ÷ .123 = 393.04878
5. 43210 ÷ 50 = 864.2
6. 987.234 ÷ .22 = 4487.42727
7. .00398 ÷ 1.2 = .0033166
8. 76.6 ÷ 3.3 = 23.212121
9. 0.897 ÷ 2.3 = .39
10. 45.6 ÷ 4.56 = 10.

Finding Part of a Whole Using the Calculator (Percentages)

To find a percentage of a whole *using the % key*, follow these steps:

Step 1:	Enter the number representing the whole
Step 2:	Press the X key
Step 3:	Enter the number of percent
Step 4:	Press the % key

EXAMPLES:

1. Find 15% of 45

Step 1:	Enter 45 on the calculator
Step 2:	Press the X key
Step 3:	Enter 15 on the calculator
Step 4	Press % key
	Answer: 6.75

2. Find 20% of 3.60

Step 1	Enter 3.60 on the calculator
Step 2	Press the X key
Step 3	Enter 20 on the calculator
Step 4	Press % key
	Answer: .72

Changing Percents to Decimals

To change a percent to a decimal, move the decimal point two places to the LEFT and drop the % sign.

1. Change 29% to a decimal.
   Move the decimal point two places to the left
   Drop the % sign

   29.% = .29
   ←

2. Change 90% to a decimal.
   Move the decimal point two places to the left
   Drop the % sign

   90.% = .90
   ←

3. Change 3.4% to a decimal.
   Move the decimal point two places to the left
   (You must add a 0 in front of the 3 in order to have two places)
   Drop the % sign

   3.4% = .034
   ←

Finding Part of a Whole Using the Calculator (Percentages)

To find a percentage of a whole *using the decimal*, follow these steps:

Step 1:	Enter the number representing the whole
Step 2:	Press the X key
Step 3:	Enter the decimal number
Step 4:	Press the equal (=) key

EXAMPLES:

1. Find 15% (.15) of 45

Step 1:	Enter 45 on the calculator
Step 2:	Press the X key
Step 3:	Enter .15 on the calculator
Step 4:	Press the equal (=) key
Answer:	6.75

2. Find 20% (.20) of 3.60.

Step 1:	Enter 3.60 on the calculator
Step 2:	Press the X key
Step 3:	Enter .20 on the calculator
Step 4:	Press equal (=) key
Answer:	.72

Finding Part of A Whole Number on the Calculator

1. Find 5% of 75.

2. Find 80% of 720.

3. Find 21% of 168.

4. Find 75% of $787.36.

5. Find 20% of $480.00.

6. K-Mart placed an order for 500 red cotton rugs. Sixty percent (60%) of the order has been completed. How many rugs have been completed?

_____

How many rugs are needed to complete the order? _____

7. When Ron tripped on the rubber mat in the laundry area and injured his leg, his medical bills totaled $276.84. If his insurance paid 80% of the expenses, how much did Ron pay? _____

8. John and Bill like to talk while they are working. They work an 8-hour shift. If they spend 15% of their work time talking, how much time do they spend talking? _____

9. Two percent (2%) of the total weight of a load of rugs is the amount of leveler that should be added to a load of nylon rugs. If a load weighs 325 pounds, how many pounds of leveler should be added to the load? (The machine is being operated manually.) _____

10. Dye tub operator #2 is preparing to dye a 150-pound load of nylon rugs. The amount of leveler should be 2% of the total pounds in the load. How many pounds of leveler should be added? (The machine is being operated manually.) _____

Attachment L
Answer Sheet

Finding Part of A Whole Number on the Calculator

1. Find 5% of 75. 3.75

2. Find 80% of 720. 576

3. Find 21% of 168. 35.28

4. Find 75% of $787.36. $590.52

5. Find 20% of $480.00. $96.00

6. K-Mart placed an order for 500 red cotton rugs. Sixty percent (60%) of the order has been completed. How many rugs have been completed?
60% of 500 = 300
How many rugs are needed to complete the order? 500 - 300 = 200

7. When Ron tripped on the rubber mat in the laundry area and injured his leg, his medical bills totaled $276.84. If his insurance paid 80% of the expenses, how much did Ron pay? $55.37

Solution A: 80% of $276.84 = $221.47. $276.84 - $221.47 = $55.34

Solution B: 100% - 80% = 20% . 20% of $276.84 = $55.37

8. John and Bill like to talk while they are working. They work an 8-hour shift. If they spend 15% of the work time talking, how much time do they spend talking? 1.2 hours

9. Two percent (2%) of the total weight of a load of rugs is the amount of leveler that should be added to a load of nylon rugs. If a load weighs 325 pounds, how many pounds of leveler should be added to the load? (The machine is being operated manually.) 6.5 pounds

10. Dye tub operator #2 is preparing to dye a 150-pound load of nylon rugs. The amount of leveler should be 2% of the total pounds in the load. How

Calculator Worksheet

Solve the following problems using the calculator:

1. 3.8 + 9.7 + 10.6 =

2. 19.23 + 8.45 + 26 =

3. .84 – .023 =

4. 17.45 X 8.3 =

5. 96.8 ÷ .2 =

6. 43.9 X 5 =

7. 16.3 + 3.76 + 90.234 – 24.3 + 1.23 – .003 =

8. 15% of 445 =

9. 80% of $389.76 =

10. 18.4 X 23.7 X 2.2 =

Attachment M
Answer Sheet

Calculator Worksheet

Solve the following problems using the calculator:

1. 3.8 + 9.7 + 10.6 = 24.1

2. 19.23 + 8.45 + 26 = 53.68

3. .84 – .023 = .817

4. 17.45 X 8.3 = 144.835

5. 96.8 ÷ .2 = 484

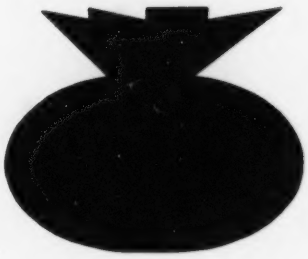
6. 43.9 X 5 = 219.5

7. 16.3 + 3.76 + 90.234 – 24.3 + 1.23 – .003 = 87.221

8. 15% of 445 = 66.75

9. 80% of $389.76 = $311.81

10. 18.4 X 23.7 X 2.2 = 959.376



401K
Insurance
Gross Pay

Benefits

Advancements
Eligibility
Educational
Opportunities

Module: Fieldcrest Cannon Employees Benefits **Overall Time 60 min**
Job Title: Dye House Operators **Page 1 of 1**

Specific Instructional Objective	Learning Activities	Time	Resources/ Materials	Evaluation Process
Utilize calculator skills to compute benefits using basic math functions with 100% accuracy.	**Motivational Activity**: Teacher will introduce a number trick activity (Attachment A)	5 min	Attachment A	
	Teach Vocabulary: Teacher will use overhead transparency to introduce vocabulary words.	5 min	Overhead Projector Transparency Attachment B	
	Instructional Activities: Teacher lead discussion of 401K plan. Completion of workbook Attachment C	15 min	Calculators Attachment C	Teacher will check for accuracy and understanding
	Teacher lead discussion of Medical Coverage Options. Completion of workbook Attachment D	15 min	Attachment D	Teacher will check for accuracy and understanding
	Teacher lead discussion of Educational Opportunities	10 min	Attachment E	Teacher observation of responses
	Question and Answer session led by invited guest (Personnel Manager or Assistant Mgr.)	10 min	Guest Speaker	

FIELDCREST CANNON

Job Title: Dye House Operators

Module: Fieldcrest Cannon Employee Benefits

General Instruction Objective: Familiarize associates with Fieldcrest Cannon, Inc. Benefits Package.

Specific Instructional Objective: Utilize calculator skills to compute benefits using basic math functions with 100% accuracy.

Motivational Activity: The teacher will introduce a number trick activity (Attachment A) in order to initiate the students' interest in working with numbers.

Vocabulary: Teacher will use overhead transparency to orally review words that pertain to the benefit package of Fieldcrest Cannon, Inc. Vocabulary words are defined in Attachment B of participant workbook.

Instructional Activities:
Distribute calculators to learners.

Teacher will refer learners to pages 1 and 2 of Attachment C and conduct a teacher lead discussion of the Fieldcrest Cannon 401K Plan.

Teacher will refer learners to pages 3 and 4 of Attachment C. Teacher and students will work the first 4 problems together. After completing the first 4 problems, teacher will allow learners time to complete items 5-7 independently. (Teacher will observe learners and assist those needing assistance.) After completion, check answers for accuracy.

Teacher will refer learners to pages 1-3 of Attachment D and conduct a teacher led discussion of the Medical Coverage Options.

Learners will complete page 4 of Attachment D independently. (Teacher will observe learners and assist those needing assistance.) After completion, check answers for accuracy.

Teacher will refer learners to pages 1-4 of Attachment E in workbook and conduct a teacher led discussion of Educational Opportunities. Ask for a show of hands of those who are taking advantage of any of the educational opportunities offered at Fieldcrest Cannon.

Personnel Manager will conduct a Question and Answer session.

Number Trick

Directions: The instructor will orally state the following information to the students. Students will solve the number trick on paper.

- Pick a 3-digit number — 345
- Write your number twice to form a 6 digit number — 345,345
- Divide your number by 7. It should divide evenly — 45,345 ÷ 7 = 49,335
- Divide the quotient (answer by 11)
  Again, there should not be a remainder — 49,335 ÷ 11 = 4,485

- Once more, divide the last quotient by 13 — 4,485 ÷ 13 = 345

Try the trick with different 3-digit numbers. What happens each time?

Vocabulary Words

401K - A savings plan that lets you save for your retirement before you pay federal income taxes (tax deferred). Also, you do not pay federal income taxes on the dividends and interest you earn in the 401K plan until you start to spend the money at retirement.

Part-time - An employee who is scheduled to work less than the normal work week.

Deductible - A specified amount the employee is required to pay before the insurance company assumes responsibility for its percentage of expenses incurred. (This amount can vary according to the plan chosen.)

Eligibility - Qualified to be chosen; allowed to participate.

Leave of Absence - Permission to be absent from work for a specified time.

FCN - Fieldcrest Cannon Network (company insurance).

Percentage - A part of a whole expressed in hundredths.

Gross Pay - Amount of pay ***before*** taxes and other deductions are deducted.

Net Pay - Take home pay or pay ***after*** taxes and other deductions are deducted from gross pay.

Dependent Coverage - Insurance benefits for employee's spouse and each of his/her single children up to the age of nineteen or twenty-five if a full time student.

Out Sick - Absent from work due to a non-occupational illness or injury.

Inflation - A condition in which the money in circulation is more than the goods on sale.

Prospectus - A printed statement that describes or forecasts the course or nature of something and is distributed to investors or participants.

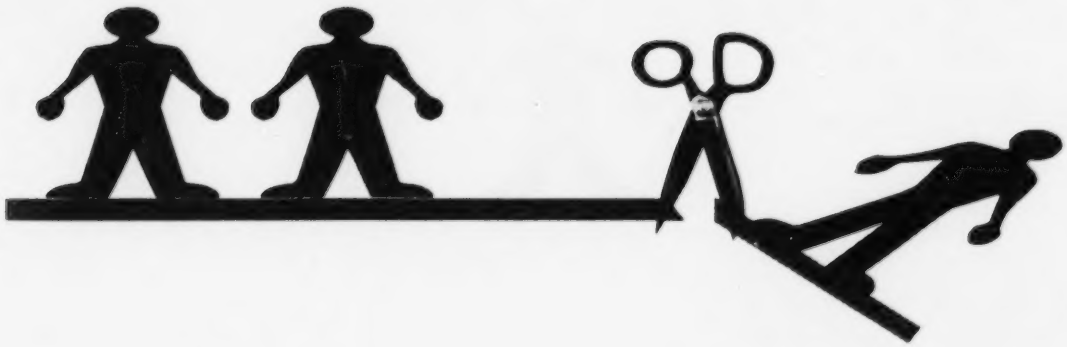
TQM - Total Quality Management

Attachment B
Transparency

Vocabulary Words

401K	Gross Pay
Part-time	Net Pay
Deductible	Dependent Coverage
Eligibility	Out Sick
Leave of Absence	Inflation
FCN	Prospectus
Percentage	TQM

Note: Attachments C, D, and E have been deleted from the generic curriculum due to the nature of their content. These attachments pertained to the benefits at Fieldcrest Cannon and would not pertain to other companies. Information relating to the particular company should be inserted here.

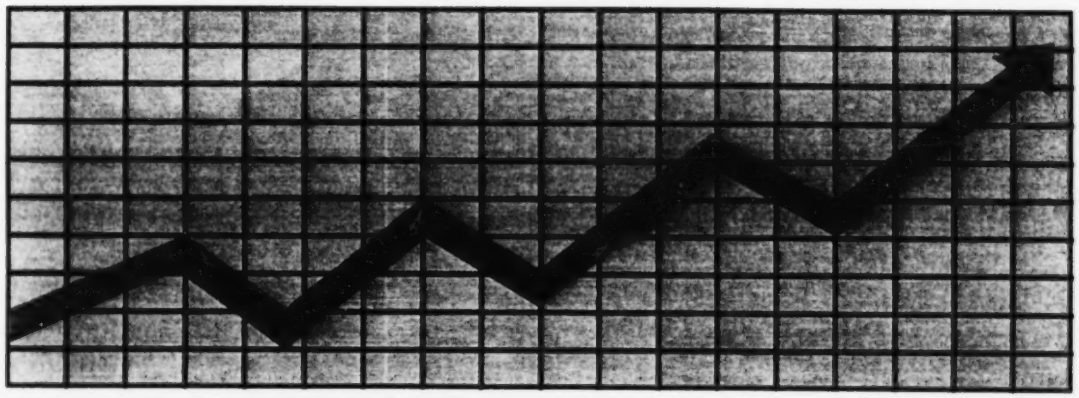


DON'T GET LEFT OUT!

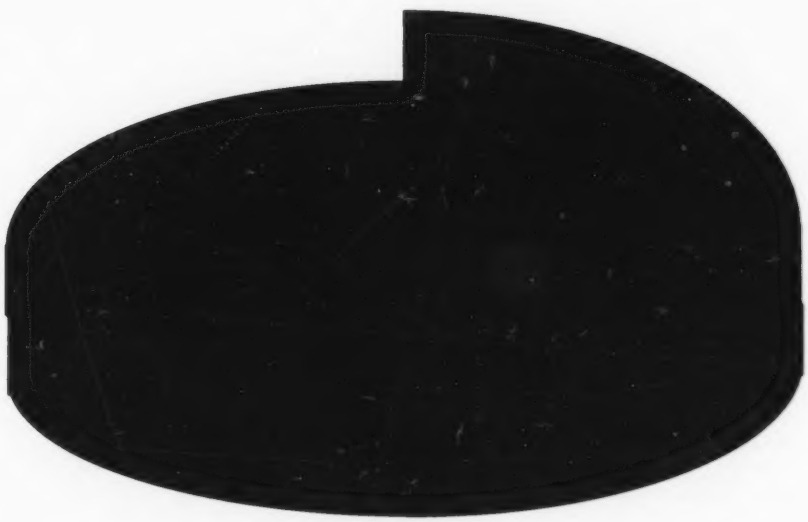
As technology changes, workers must acquire the higher level skills needed to perform in the workplace of today. The worker of the 21st century must possess the skills necessary to employ technology, evaluate information, and deal effectively with human relations matters. The basic skills that were once sufficient for assembly line production are insufficient for workers confronted with complex quality control systems, flexible production, quality circles, and total quality management (TQM) (Workplace Literacy, 1992).

LET'S KEEP UP!

TAKE ADVANTAGE OF OPPORTUNITIES



SPC



Module: Basic SPC **Overall Time 2 hours**

Job Title: Dye Tub Operators **Page 1 of 1**

Specific Instructional Objective	Learning Activities	Time	Resources/ Materials	Evaluation Process
Learners will be able to identify data using mean, median, and mode. Students will relate data on charts in regards to their specific job.	**Motivational Activity:** The teacher will distribute a graph to use to demonstrate hands on charting.	10 min	Graph (Attach A), M&M candy	Participation
	Vocabulary: Learners will work together to define vocabulary words.	10 min	Attachment B, Overhead projector, transparency	Participation
	Instructional Activities: The instructor will identify the method of finding averages. (Specific details outlined in lesson plan).	30-40 min	Overhead, markers	Active observation
	The instructor will give a pretest to determine learners prior knowledge.	10 min	Attachment C	Instructor checks for understanding
	The instructor will distribute Attachment D for the learners to work in small groups.	10 min	Attachment D	Review

Job Title: Tub Operators

Module: Math (Basic SPC)

General Instructional Objective: Utilize Occupational Specific Math - Introduction to Basic SPC

Specific Instructional Objective: Identify data using mean, median and mode. Recognize data on graphs pertaining to Fieldcrest Cannon.

Motivational Activity: The teacher will distribute a graph (Attachment A) to each learner. The words red, blue, yellow, green, brown, and orange are printed on the bottom of each column of the graph. The teacher will distribute a small package of M&M candy to each learner. At this time the teacher will walk away from the learners without giving them any instructions. After a few minutes the teacher will return to the learners and observe what they are doing with the graph and M&M's. The teacher at that time will instruct the learners to put all of the green M&M's in the column that is labeled green, the red M&M's in the red column,etc. After completion the teacher will explain that they have just charted the colors of candy in a package of M&M's. What was the result of this graphing? The teacher will explain to the learners the advantage of using graphs in todays changing world.

Vocabulary: Show vocabulary words and definitions on an overhead (Attachment B). The teacher will lead a discussion of words and meanings.

Data	Variable	Statistical Process Control
Range	Median	Average/Mean
Statistics	Mode	Line Graph
Bar Graph	Circle Graph	Pie Chart

Instructional Activities:

The teacher will explain to the learners the method used in finding an "average" of something. The teacher will work two or three problems on an overhead or chalkboard to demonstrate the method of finding averages. As an example of averaging, the teacher will ask four or five students to volunteer their shoe size. The teacher will first list the shoe sizes of the learners on the board, next add the numbers, and then divide the sums by how many sizes were listed. The answer will be the average shoe size of the learners who volunteered. As another example of averaging, the teacher will ask the ages of a few of the learners' children. Using the previous method, the teacher will determine the average age of the learners' children. (An example of this worksheet is in the teachers manual.) The teacher will reinforce the meaning of the word "average" and state the word "mean" is another word for average.

The teacher will again explain to the students that to find the average/mean for a group of numbers you must:

First add the numbers.
Then divide the sum of the numbers by how many numbers that are listed.

(REMINDER: An average is usually not equal to any of the numbers in the groups you add. However, it is often close to the middle value of the group.)

At this time the teacher will give a pre-test (Attachment C) to the learners to evaluate prior understanding and knowledge of completing averaging without the use of a calculator. The teacher will review the pretest at a later time. The teacher will now ask the learners to turn to Attachment D in their notebooks. The teacher will review and discuss this worksheet orally with the students, reemphasizing the fact that the word average and mean have the same definition. The learners will work this sheet in small groups using their calculators. Upon completion the teacher and learners will orally review this worksheet. The teacher will at this time review the definitions of the terms previously introduced: Mean, Mode, Median and Range. After this review the teacher will explain the culuminating activity and identify the numbers listed on the chart before learners begin their assignment (Attachments E and F).

The teacher will display examples of a line graph, bar graph, and circle graph on an overhead. (Attachments Graphs). The teacher will discuss the each graph in detail before assigning a worksheet (Attachment G) for the students to complete.

Evaluation: The teacher will review the students pretest, worksheets and observe their participation.

Attachment A

	RED	**BLUE**	**YELLOW**	**GREEN**	**BROWN**	**ORANGE**

TEACHER WORKSHEET

Example 1 An employee scores 95, 75, 84, 70 and 98 on five math tests. Find the average score.

Solution:

Step 1. Find the sum of all of the test scores.

$95 + 75 + 84 + 70 + 96 = 420$

Step 2. Divide the sum by the number of test scores (5).

$420 \div 5 = 84$

The average score is 84

Example 2 Find the average shoe size of your co-workers.

8, 10, 12, 11, 9

Solution:

Step 1. Add all sizes $8 + 10 + 12 + 11 + 9 = 50$

Step 2. Divide the total by the number of workers (5) 50 = 10.

$50 \div$ by $5 = 10$

The average size is 10.

Vocabulary Words and Definitions

Mean /Average - the sum of the numbers divided by the number of items, represents a middle point

Mean - the sum of numbers divided by the number of items

Data - factual information

Range - the difference between the highest and lowest values in a group

Median - point in a set of numbers at which half of the numbers are above and half of the numbers are below this point

Statistics - math that deals with the collection, analysis and presentation of mass data

Variable - to change or to vary

SPC - Statistical Process Control

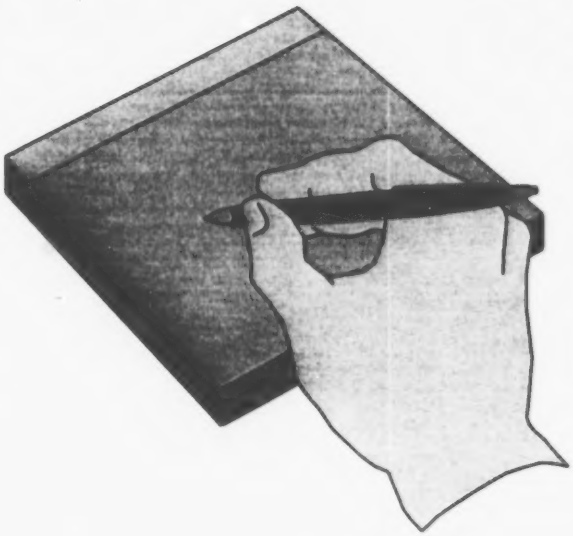
Mode - the number most often appearing

Circle Graph - graph showing the whole amount as a circle. Sometimes referred to as pie charts

Line Graph - graph using lines to show patterns or trends. Often useful when comparing changes in amounts

Bar Graph - graph using different lengths of bars to compare values

Pre Test

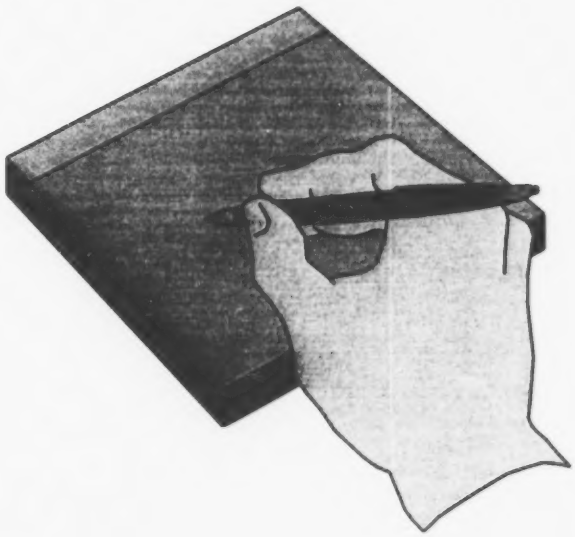


Calculate the sums (=) and averages (X) of the following groups of numbers without using a calculator.

1.					
	33	25	23	36	37
	31	21	22	39	30
	+32	+24	+21	+33	+38
	=	=	=	=	=
	X =	X=	X=	X=	X=

2.					
	42	66	73	86	93
	43	65	74	88	96
	44	61	75	90	99
	45	62	71	84	95
	+ 41	+60	+76	+82	+91
	=	=	=	=	=
	X =	X =	X =	X =	X =

Pre Test



Calculate the sums (=) and averages (X) of the following groups of numbers without using a calculator.

1.	33	25	23	36	37
	31	21	22	39	30
	+32	+24	+21	+33	+38
	96	70	66	108	105
	=	=	=	=	=
	X = 32	X= 23.3	X=22	X=36	X=35

2.	42	66	73	86	93
	43	65	74	88	96
	44	61	75	90	99
	45	62	71	84	95
	+ 41	+60	+76	+82	+91
=	215	= 314	= 369	= 430	= 474
	X = 43	X =62.8	X = 73.8	X = 86	X = 94.8

Worksheet
Computing Averages

Directions: Find the mean/average of the following numbers:

a. 20 18 23 19 22 _____

b. 2.3 3.40 4.56 7.9 10.3 _____

c. 384 519 345 362 659 _____

d. 7105 8005 9014 6342 _____

e. 43 26 51 78 90 _____

f. 2.3 3.40 4.56 7.9 10 _____

g. 284 219 345 459 645 _____

Worksheet
Computing Averages

Directions: Find the mean/average of the following numbers:

a.	20	18	23	19	22	**20.4**
b.	2.3	3.40	4.56	7.9	10.3	**5.692**
c.	384	519	345	362	659	**453.8**
d.	7105	8005	9014	6342		**7616.5**
e.	43	26	51	78	90	**57.6**
f.	2.3	3.40	4.56	7.9	10	**5.632**
g.	284	219	345	459	645	**390.4**
h.	7105	8005	9014	6342	4320	**5957.2**

Directions: Complete the following word problems.

1. A dye tub operator completed 20 loads, 18 loads, 23 loads, 19 loads, and 22 loads over 5 days. What was the average number of loads completed each day?

_____

2. Thomas dyed 29,620 pounds of rugs in ten days. How many pounds did he average dying each day?

_____

3. A dryer tender stacked 28 loads, 22 loads, 18 loads, 20 loads, and 26 loads over 5 days. What was the average number of loads completed each day?

_____

4. A dye tub operator completed 20 loads, 18 loads, 23 loads, 19 loads, and 22 loads over 5 days. What was the average number of loads completed each day?

_____

5. Harold dyed 14,890 pounds of rugs in a five day work week. How many pounds did he average dying per day?

_____

6. A dryer tender stacked 35 loads, 28 loads, 33 loads, 25 loads, and 38 loads over 5 days. What was the average number of loads stacked each day?

_____

Directions: Complete the following word problems.

1. A dye tub operator completed 20 loads, 18 loads, 23 loads, 19 loads, and 22 loads over 5 days. What was the average number of loads completed each day?

20.4

2. Thomas dyed 29,620 pounds of rugs in ten days. How many pounds did he average dying each day?

2962

3. A dryer tender stacked 28 loads, 22 loads, 18 loads, 20 loads, and 26 loads over 5 days. What was the average number of loads completed each day?

22.8

4. A dye tub operator completed 20 loads, 18 loads, 23 loads, 19 loads, and 22 loads over 5 days. What was the average number of loads completed each day?

20.4

5. Harold dyed 14,890 pounds of rugs in a five day work week. How many pounds did he average dying per day?

2978

6. A dryer tender stacked 36 loads, 28 loads, 33 loads, 25 loads, and 38 loads over 5 days. What was the average number of loads stacked each day?

30

The **mean/average** of a set of numbers is the sum of the numbers divided by the number of items.

The **median** of a set of numbers is the middle number once the numbers have been arranged in order of size.

The **range** in a set of numbers is the difference between the largest and smallest numbers.

The **mode** in a set of numbers is the number that appears most often.

Directions: **Find the mean and median.**

		Mean	Median
(1)	2, 6, 9, 4, 7, 6	_____	_____
(2)	19, 14, 11, 15, 19	_____	_____
(3)	7, 9, 12, 15, 8, 7, 7, 5, 9	_____	_____
(4)	46, 92, 75, 90, 78, 46	_____	_____
(5)	75, 90, 82, 68, 72	_____	_____

The **mean/average** of a set of numbers is the sum of the numbers divided by the number of items.

The **median** of a set of numbers in the middle number once the numbers have been arranged in order of size.

The **range** in a set of numbers is the difference between the largest and smallest numbers.

The **mode** in a set of numbers is the number that appears most often.

Directions: **Find the mean and median.**

		Mean	Median
(1)	2, 6, 9, 4, 7, 6	5.7	6
(2)	19, 14, 11, 15, 19	15.6	15
(3)	7, 9, 12, 15, 8, 7, 7, 5, 9	8.8	.8
(4)	46, 92, 75, 90, 78, 46	71.2	0
(5)	75, 90, 82, 68, 72	77.4	75

Directions: Find the range and mode.

	Range	Mode
1. 15, 19, 38, 14, 16, 15, 17, 10, 25, 32, 21	_____	_____
2. 85, 44, 62, 46, 44, 48, 46, 44, 75, 72, 60	_____	_____
3. 37, 20, 38, 25, 37, 25, 37, 40, 38, 35, 38	_____	_____
4. 125, 110, 90, 124, 90, 130, 110, 120, 90	_____	_____
5. 1.4, 2.8, 7.6, 3.4, 2.8, 3.6, 7.06, 4	_____	_____
6. 4.2, 1.8, 3.7, 1.6, 6.2, 3.5, 4.8, 5	_____	_____

Directions: Find the range and mode

	Range	Mode
1. 15, 19, 38, 14, 16, 15, 17, 10, 25, 32, 21	**28**	**15**
2. 85, 44, 62, 46, 44, 48, 46, 44, 75, 72, 60	**41**	**44**
3. 37, 20, 38, 25, 37, 25, 37, 40, 38, 35, 38	**20**	**38,37**
4. 125, 110, 90, 124, 90, 130, 110, 120, 90	**40**	**90**
5. 1.4, 2.8, 7.6, 3.4, 2.8, 3.6, 7.06, 4	**6.2**	**2.8**
6. 4.2, 1.8, 3.7, 1.6, 6.2, 3.5, 4.8, 5	**4.6**	**NONE**

Culminating Activity

Have students complete the chart showing averages among 5 employees. When the charts are completed, discuss the answers as a group to compare.

Find the average for each column:

Tub	Weekly Redyes	Weekly Loads	Actual Minutes	Average Minutes Per Load
A	5	26	2100	
B	18	30	2322	
C	12	28	2400	
D	03	30	2250	
E	06	36	2360	
Weekly Average				

Attachment F
Answer Sheet

Culminating Activity

Have students complete the chart showing averages among 5 employees. When the charts are completed, discuss the answers as a group to compare.

Find the average for each column:

Tub	Weekly Redyes	Weekly Loads	Actual Minutes	Average Minutes Per Load
A	5	26	2100	8076
B	18	30	2322	7740
C	12	28	2400	8571
D	03	30	2250	7500
E	06	36	2360	65.55
Weekly Average	8.8	30	2286	76.88

Note: Graphs pertaining to Fieldcrest Cannon have been deleted from the generic curriculum. Industry specific information could be inserted to replace deleted graphs.

Directions: Solve the following reading problems. You may use your calculator.

1. George Jameson weighs 185 pounds, his wife weighs 138 pounds, their daughter Jan weights 97 pounds, their son Joe weighs 88 pounds. What is the average/mean weight for the members of the Jameson family?

2. In June, Al's water bill was $14, in July it was $22, in August it was $33, and in September it was $18 What is the amount of the average/mean water bill? What was Al's average water bill for the four-month period?

3. How much time do you spend sleeping each night, on the average? If you are likea lop of people, you sleep more hours on the weekend than on weekdays. Add up the hours you slept each night last week, then divide by seven to find the average.

4. How do you figure the gas mileage that you get for your car? Explain the procedure you use to determine your mileage.

_____

_____

_____

Directions: After studying the bar graph that is shown on an overhead showing Scottsboro Rug Mill Percent Seconds, answer the following questions.

1. Is the graph vertical or horizontal?

2. In which year were there the most seconds?

3. In which year were there the least seconds?

Directions: Solve the following reading problems. You may use your calculator.

1. George Jameson weighs 185 pounds, his wife weighs 138 pounds, their daughter Jan weights 97 pounds, their son Joe weighs 88 pounds. What is the average/mean weight for the members of the Jameson family?

2. In June, Al's water bill was $14, in July it was $22, in August it was $33, and in September it was $18 What is the amount of the average/mean water bill? What was Al's average water bill for the four-month period?

3. How much time do you spend sleeping each night, on the average? If you are like a lot of people, you sleep more hours on the weekend than on weekdays. Add up the hours you slept each night last week, then divide by seven to find the average.

4. How do you figure the gas mileage for your car? Explain the procedure you use to figure the mileage.

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1. Is the graph vertical or horizontal?

2. In which year were there the most seconds?

3. In which year were there the least seconds?

Directions: After studying the line graph showing Scottsboro Rug Mill Percent Seconds, answer the following questions.

1. Which year showed the smallest amount of seconds?

2. Which year showed the largest amount of seconds?

3. What month and year were the least amount of seconds shown?

4. What is the average amount of seconds you can identify by looking at this graph at a glance?

Directions: After studying the circle graph concerning 1995 Warehouse Costs, answer the following questions.

1. What is the most expensive cost in the upkeep of the Warehouse?

2. What percent is contract labor?

3. Would overtime and contract labor equal to the same amount as supplies?

4. Of the three graphs which was the easiest for you to read?

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